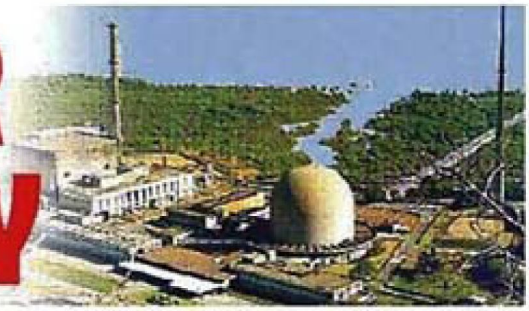
NUCLEAR SECURITY



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

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OPINION – Rajesh Rajagopalan

China Can Exploit the US Fear of Nuclear Escalation & Create Trouble at Borders

Is the world drifting toward another world war? While the question certainly sounds dramatic, there has been significant concern about the potential for inadvertent escalation. There is little consensus, however, on which of the previous world wars the current conditions parallel. Some suggest that the world is witnessing a return to the conditions before World War I, while others point to those before World War II. Uncomfortable parallels exist with both eras.

Prior to World War I, a combination of shifting great power balances, hyper-nationalism, and misperceptions of both power and intent led world leaders to sleepwalk into a war whose consequences they did not fully understand. Elements of these conditions are present today as well, as China, due to its rise and hyper-nationalism, seems to be on a course that increases the chances of a war with the US and its partners in the Indo-Pacific region. There is also a significant amount of misperceptions on both sides that heighten the danger. Several pathways can ignite such a conflagration, especially considering China's conflicts with countries around its periphery that look to Washington for protection.

Prior to World War I, a combination of shifting great power balances, hyper-nationalism, and misperceptions of both power and intent led world leaders to sleepwalk into a war whose consequences they did not fully understand. Elements of these conditions are present today as well, as China, due to its rise and hyper-nationalism, seems to be on a course that increases the chances of a war with the US and its partners in the Indo-Pacific region.

Then there are circumstances that parallel with some of the conditions prior to World War II, which developed much more slowly than World War I. Unlike the First World War, which began with a series of war declarations in just a couple of weeks in August 1914, the Second World War was not a single event that pitted all great powers against each other. A number of different, unconnected regional conflicts slowly came

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together over more than two years to make it a global war by the end of 1941. The WWII parallels today are clear, with Russia's brutal invasion of Ukraine, the Hamas terrorist attack and Israel's subsequent horrible war in Gaza, and the continuing threat of China's attack in the South China Sea and Taiwan. The sense of growing crisis is further strengthened by the development of opposing camps, with the US and its partners on one side, and Russia and China on the other, coupled with their 'no limits' partnership. The formation of opposing coalitions is another feature that was common with both periods.

A number of different, unconnected regional conflicts slowly came together over more than two years to make it a global war by the end of 1941. The WWII parallels today are clear, with Russia's brutal invasion of Ukraine, the Hamas terrorist attack and Israel's subsequent horrible war in Gaza, and the continuing threat of China's attack in the South China Sea and Taiwan. The sense of growing crisis is further strengthened by the development of opposing camps, with the US and its partners on one side, and Russia and China on the other, coupled with their 'no limits' partnership.

Analogies Suspect, but Necessary: Such analogies with previous eras are always suspect, even though we use them all the time. The human tendency to create such intellectual shortcuts may lead to a misdiagnosis of contemporary conditions and misapplication of the wrong lessons—a concern indicated by the old aphorism that 'generals are always preparing to fight the last war.' On the other hand, drawing analogies may be psychologically unavoidable because leaders, as human beings, cannot take every circumstance they face as sui generis and approach it completely afresh. We take readings from the past to help guide us in the present and prepare for the future.

These analogies drawing parallels with previous world wars do not fully acknowledge the difference that nuclear weapons make to crisis escalation. While the basic principles of interstate politics have arguably remained familiar if not constant since the beginning of inter-state relations, one fundamental element has not. Among nuclear-armed states, war is no longer normal.

Using analogies is, therefore, unavoidable; the only way to deal with it is by being careful and open to potential alternative explanations, especially given that many specific events are contingent and not, even in retrospect, inevitable. The question then becomes about which historical analogy to use, or more importantly, which aspects of these analogies are useful. Despite the caveat above, debating concerns about the growing great power tensions and its parallels with past crises may be necessary for raising awareness of current dangers, especially considering the consequences of a larger war for the entire world. We need to keep in mind one more important point: nuclear difference. These analogies drawing parallels with previous world wars do not fully acknowledge the difference that nuclear weapons make to crisis escalation. While the basic principles of interstate politics have arguably remained familiar if not constant since the beginning of inter-state relations, one fundamental element has not. Among nuclear-armed states, war is no longer normal. Both the US and the Soviet Union took great care, especially after the Cuban Missile Crisis in 1962, to ensure that they would not risk nuclear escalation again.

Rattling the Nuclear Sabre: This does not mean that nuclear weapons can prevent all wars. We do have several examples of nuclear-armed states going to war, including Kargil. But fear of nuclear escalation does dampen the enthusiasm for war. Even in Kargil, both India and Pakistan imposed constraints on their use of force that suggests concern about nuclear escalation. Indian leaders ensured that Indian military action stayed on the Indian side of the LoC while Pakistan essentially abandoned its forces rather than escalate—Instead of responding to India by

starting a conventional war, Rawalpindi let its forces be butchered. So, will this nuclear difference prevent a future war between either the US and China or the US and Russia? On the positive side, Russia's repeated nuclear escalation threats have so far been shown to be empty rhetoric, even if nuclear threats can never entirely be dismissed, given the scale of their consequences.

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However, the rapid expansion of China's nuclear force suggests that China intends to use it as a shield to engage in conventional aggression in its neighbourhood. This carries great risks. Moreover, the larger and more complex a nuclear arsenal is, the greater the challenges of controlling it in a crisis. On the other hand, is concern about nuclear escalation always a good thing? What if it leads to policy paralysis, as it did in the US's support to Ukraine? If other countries assume your reticence is driven by the fear of nuclear escalation, then it's a potential vulnerability that can be exploited. For decades, Pakistan exploited this to support terrorism against India. Will the US be deterred from intervening in Taiwan if China rattles the nuclear sabre? One countervailing point is that the US also has to worry about its own credibility, especially with allies that are under its nuclear umbrella and can build their own nuclear weapons.

This is what has seemingly constrained the US toward NFU, for example. Ukraine faced a similar concern, but it is not a formal ally and now it doesn't have the ability to build nukes. However, several US partners in East Asia are both formal allies and nuclear powers. Would the threat of nuclear escalation alone prevent a repeat of the follies of the past.

This is what has seemingly constrained the US toward NFU, for example. Ukraine faced a similar concern, but it is not a formal ally and now it doesn't have the ability to build nukes. However, several US partners in East Asia are both formal allies and nuclear powers. Would the threat of nuclear escalation alone prevent a repeat of the follies of the past? While it is difficult to be certain, the first two decades of the nuclear age were fairly troubled, with frequent crises. It was only after looking down the abyss in 1962 that the two superpowers pulled back. All this to say that this first decade of US-China nuclear parity is likely to be rocky.

Source: https://theprint.in/opinion/china-can-exploit-the-us-fear-of-nuclear-escalation-and-create-trouble-at-borders/2138148/, June 20, 2024.

OPINION – Yossi Mekelberg

Can We Envision a World Without Nuclear Weapons?

During a week in which Russian President Vladimir Putin concluded a visit to North Korea with the signing of a mutual defense pact between Moscow and Pyongyang that is likely to make the latter's military nuclear program even more brazen, I happened to visit the Japanese city of Hiroshima, the first city to be hit by an atomic bomb.

It left me extremely moved but also contemplative about why on earth we still possess nuclear weapons. On Aug. 6, 1945, at 8:15 a.m., an American B-29 bomber, the Enola Gay, dropped an atomic bomb on the city, instantly killing at least 70,000 people. By the end of the year, the death toll had reached 140,000. The bomb vaporized people almost a kilometer from ground zero, and burned the exposed skin of people kilometers away as a result of the intense infrared energy that was unleashed.

Catastrophic fires ravaged a circular area with a radius of more than 3 km, as the city literally burned to the ground. The results would be similar three days later when the US bombed a second Japanese city, Nagasaki, this time causing 100,000 deaths directly attributable to the initial blast. The horrific effects of the bombs on the Japanese

people and their environment continued to be felt for many years, including premature deaths, lifelong trauma, and a significant links between radiation exposure and major congenital defects, malformations, stillbirths, and neonatal deaths.

We can perhaps learn the lessons of history but we can never, even remotely, assume that they will never repeat themselves. During the bipolar superpower system of the Cold War era, both the US and the Soviet Union understood that the use of their nuclear capabilities would be irrational and could only result in mutual assured destruction (or MAD), and so an extremely high level of deterrence was established.

All this leaves no room for doubt about the dangerous futility of humanity's toying with nuclear proliferation. Worse, we have learned the wrong lessons from the fact that, despite the presence of huge arsenals of nuclear missiles with sophisticated delivery systems, these weapons with the power to destroy humanity have, thankfully, never been employed again. When, in the late 1940s, the US lost its monopoly on nuclear weapons and the Soviet Union joined the nuclear arms race, a fairly stable state of deterrence was established between the two superpowers and their allies. Since then, six other countries have become confirmed nuclear military powers: China, the UK, France, India, Pakistan, and North Korea. Israel is also widely believed to possess such a capability.

Can anyone guarantee that a world with nuclear weapons is truly a safe one? A world that is inherently unstable, as is the current state of international affairs, in which most countries in possession of nuclear weapons suffer from unreliable political systems, with leaders who are increasingly authoritarian and have scant respect for accountability and transparency? The very concept of deterrence, and especially nuclear deterrence, represents a very pessimistic view of human nature.

We can perhaps learn the lessons of history but we can never, even remotely, assume that they will never repeat themselves. During the bipolar superpower system of the Cold War era, both the US and the Soviet Union understood that the use of their nuclear capabilities would be irrational and could only result in mutual assured destruction (or MAD), and so an extremely high level of deterrence was established.

Neither side ever pushed the button, so to speak, but that is not to say the superpowers did not teeter on the brink of cataclysm, even if ultimately they managed to remain one step clear of the nuclear abyss. For two weeks during the Cuban Missile Crisis in October 1962, Moscow and Washington came very close to launching nuclear missiles at one another, before common sense prevailed.

Can anyone guarantee that a world with nuclear weapons is truly a safe one? A world that is inherently unstable, as is the current state of international affairs, in which most countries in possession of nuclear weapons suffer from unreliable political systems, with leaders who are increasingly authoritarian and have scant respect for accountability and transparency? The very concept of deterrence, and especially nuclear deterrence, represents a very pessimistic view of human nature. Perceptually and practically, it dictates that we live in a state of peace — or, more accurately, that we decide not to go to war with one another — not because it is the right thing to do or out of concern about the immorality that accompanies war, and not even because it might serve our interests as individuals or societies. Deterrence means that we avoid wars mainly because we fear their consequences, and the fear of nuclear annihilation is our ultimate source of dread. Our fears and predictions of global extinction have prevailed for thousands of years and have yet to be banished.

In recent times, experiments in collective security guided by international law, such as the UN, or globalization as a prevailing paradigm of

worldwide cooperation have at best achieved only partial success. Similarly, the model provided by the EU, which represents a direct challenge to the adversarial concept of the security dilemma and its inevitable outcome in the form of the arms race, is facing severe challenges and has yet to be emulated in other parts of the world. Meanwhile, wars and conflicts persist and continue to claim hundreds of thousands of lives every year. And nuclear weapons are the ultimate tool of force which, if unleashed, could annihilate humanity altogether.

A world of nuclear weapons and nuclear deterrence is not a safer world but an accident waiting to happen, whether technically or politically. After nearly 80 years of a nuclear era during which the bomb has not been used since Hiroshima and Nagasaki, we should not be lulled into a false sense of security and assume it will never be used.

There is a stark contrast between the social contract that prevails in societies in which law, common values, and behavioral norms regulate relations between people and where trust and mutual respect are pillars of society, and the element of anarchy that continues to prevail in international affairs, in which a concept scholars call the "realist" approach still rules supreme. This approach views war as a mechanism to ensure stability, and the pursuit of gains by force as part and parcel of the kind of world affairs in which nuclear weapons have been a component for decades.

This, and the very existence in the world of about 12,100 nuclear warheads, should deeply concern all of us. After all, in Hiroshima and Nagasaki the world witnessed the horror that "only" two such weapons could unleash when launched, ultimately, on the orders of one person alone.

For a brief moment, in the immediate aftermath of the Cold War, nuclear disarmament seemed to be the ultimate outcome in a world with no more big power rivalry, and consequently the reduction in nuclear arsenals would be substantial. This is no longer the case. According to the annual report of the SIPRI, the nine nuclear-armed states continue to modernize their nuclear weapon stockpiles as they deepen their reliance on deterrence.

In a separate report, the International Campaign to Abolish Nuclear Weapons calculated that these countries spent a combined total of $91.4 billion on their nuclear arsenals in 2023. Meanwhile, Iran is regarded as being a "nuclear threshold" state.

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In recent years a number of negative precedents have been set, including a permanent member of the UN Security Council invading a neighboring country without provocation and threatening to use nuclear weaponry in the process. This, and the very existence in the world of about 12,100 nuclear warheads, should deeply concern all of us. After all, in Hiroshima and Nagasaki the world witnessed the horror that "only" two such weapons could unleash when launched, ultimately, on the orders of one person alone.

Source: Yossi Mekelberg is a professor of international relations and an associate fellow of the Middle East and North Africa Program at international affairs think tank Chatham House. https://www.arabnews.com/node/2540241, June 29, 2024.

OPINION – Hamid Bahrami

The Strategic Shift in Iranian Public Opinion on Nuclear Weapons

The recent surge in Iranian public support for nuclear weapons, as revealed by the IranPoll survey, can be significantly attributed to the

ongoing conflict in Gaza and the perceived actions of Israel. Many Iranians believe that, in a hypothetical war scenario between Iran and Israel, Israel would retaliate for battlefield losses by targeting Iranian civilians, much like the alleged genocide in Gaza. This fear drives a heightened desire for a formidable deterrence capability to protect Iran from potential mass casualties inflicted by Israel. Iran's strategic culture profoundly influences its population's support for nuclear armament. Strategic culture encompasses the worldview and policy-making patterns of a state's political and military leadership. In Iran's case, this culture is shaped by historical legacies, shared beliefs, collective experiences and decision-making modes that mould the nation's threat perceptions and strategic thinking.

Many Iranians believe that, in a hypothetical war scenario between Iran and Israel, Israel would retaliate for battlefield losses by targeting Iranian civilians, much like the alleged genocide in Gaza. This fear drives a heightened desire for a formidable deterrence capability to protect Iran from potential mass casualties inflicted by Israel. Iran's strategic culture profoundly influences its population's support for nuclear armament.

Iran's strategic behaviour since the 1979 Revolution is deeply rooted in historical legacies of decline in relative power and frequent interventions by great powers over the past two centuries. This history has instilled a sense of insecurity, resentment and distrust towards the West and Russia. Iranians see themselves as natural leaders of the Middle East, expecting to play a primary role in Central Asia and the Caucasus. Actions undermining this perceived rightful place trigger strong reactions, reflecting the sensitivity of Iranian leaders and people to their status in regional and global affairs.

Geography also plays a crucial role in Iran's strategic thinking. The desire for a preeminent role in Middle Eastern political and security affairs and maximum freedom of action in its surrounding region stems from both a historical sense of leadership and a need to prevent encirclement by more powerful states. This sentiment resonates with Iranian resentment of past humiliations by world powers during the Qajar and Pahlavi dynasties. The current Iranian regime's efforts to blend nationalism with Shi'ism under the slogan "Achaemenian Gene and Hosseini Blood" reflect a strategic attempt to unify the nation. This slogan evokes the ancient Persian Achaemenid Empire and the martyrdom of Imam Hossein, combining historical pride with religious devotion.

Imam Hossein's legacy of resistance against oppression and his willingness to sacrifice for justice are powerful symbols that resonate deeply within Iranian society. This fusion of nationalism and religious identity aims to reinforce a sense of unity and purpose, especially as the society distances itself from strict Islamic ideology. Iran's strategic loneliness and quest for independence significantly influence its nuclear aspirations. Historically, Iranian leaders and citizens, both pre and post-1979, have sought to become a developed nation while maintaining independence. This aspiration has often clashed with Western interests, reinforcing a perception that the West opposes Iran's development and independence. This perception fosters a strong desire for self-sufficiency, with nuclear capability seen as a crucial component

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Iran's geopolitical isolation and history of invasions, from ancient times through the Arab and Mongol invasions, to the occupation during World War II and the eight-year war with Iraq, have shaped a national psyche deeply concerned with security. These historical experiences contribute to a collective consciousness that prioritises a robust deterrence capability to safeguard the nation's sovereignty and existence in case of emergencies. On nuclear security, they would incorporate the concept of "security by design" to address concerns of sabotage, theft, attacks and proliferation.

In the context of systemic transitions and changes in the world order, which are often accompanied by wars, Iranians are convinced of the necessity for a strong deterrence capability. This conviction transcends political systems, emphasising that regardless of whether or not the regime is democratic, the country must be able to defend its existence.

In the context of systemic transitions and changes in the world order, which are often accompanied by wars, Iranians are convinced of the necessity for a strong deterrence capability. This conviction transcends political systems, emphasising that regardless of whether or not the regime is democratic, the country must be able to defend its existence. While a democratic government is ideal, the pragmatism of realpolitik dictates a focus on tangible security measures rather than ideological aspirations. The collapse of the JCPOA, following the US withdrawal and the imposition of new sanctions, has led many Iranians to question the efficacy of diplomatic solutions.

The perceived failure of the JCPOA to deliver economic relief and security assurances has fuelled a sense of betrayal and scepticism towards future negotiations. This reinforces the belief that only a strong deterrent, including nuclear weapons, can guarantee Iran's security and sovereignty. The shift in Iranian public opinion towards supporting nuclear weapons is a multifaceted phenomenon influenced by regional conflicts, strategic culture, historical experiences and a desire for national independence.

The recent development underscores that Iranians are increasingly concerned with security and deterrence, driven by a complex interplay of historical legacies, strategic imperatives and contemporary geopolitical realities. As Iran navigates its geopolitical landscape, the growing public support for nuclear armament signals significant implications for its nuclear policy and regional security dynamics. Understanding this shift requires a nuanced appreciation of the factors shaping Iran's strategic behaviour and the broader context of its security concerns.

Source: https://www. middleeastmonitor.com/ 20240615-analysis-the-strategic-shift-in-iranian-public-opinion-on-nuclear-weapons/, June 15, 2024.

OPINION – Zafar Nawaz Jaspal

Iran's Shifting Nuclear Doctrine is Bad News for Pakistan and the Region

The international community is closely monitoring Iran's nuclear program. On June 5, the IAEA formally censured Iran over advances in its nuclear program and failure to cooperate with it. Tehran's prospective exit from the NPT to manufacture nuclear weapons would potentially kick off horizontal nuclear proliferation in the region. Furthermore, it is telling of the intrinsic relationship between civilian nuclear cooperation and nuclear weapons proliferation.

The upsurge in Iran-Israel tensions may be compelling Tehran to rethink its prohibition on developing nuclear weapons. On April 13, Iran fired 300 drones and missiles at Israel. On April 19, Israel retaliated by striking several Iranian military sites, including targets near the city of Isfahan, which includes declared nuclear facilities. The exchange of strikes and a few former US and Israeli officials urging Prime Minister Netanyahu to strike Iran's nuclear facilities germinated the impression

that Israel could strike Iranian nuclear facilities. On April 14, former US National Security Adviser John Bolton suggested that Israel should "destroy Iran's nuclear weapons program."

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Currently, Iran has stockpiled enough uranium of near-weapons-grade quality for about three weapons. Security analysts believe that it can produce "enough weapons-grade material for a nuclear weapon in less than a week." Ahmad Haghtalab, the Iran Revolutionary Guard Corps commander in charge of security at Iran's nuclear facilities, announced that the probability of Israeli strikes on the nuclear infrastructure "makes it possible to review our nuclear doctrine and deviate from our previous considerations." Responding to the recent IAEA censured resolution, Tehran threatened to expand its nuclear program.

Indeed, the shift in Iran's nuclear doctrine will have a domino effect in the Middle East and North Africa. It will severely jolt the contemporary nuclear world order. Interest in nuclear weapons and their hoped-for deterrent effect could subsequently grow in non-nuclear countries in the Middle East too. Besides, Iran's non-cooperation with the IAEA obstructs the global momentum for nuclear power to limit global warming to 1.5 degrees celsius. Nuclear energy is considered an essential source for achieving net zero emission targets and mitigating the effects of climate change. Notably, 22 countries promised to triple nuclear energy capacity by 2050 during the United Nations Climate Summit— COP28— held in Dubai in December.

Iran's deviation from its commitments with the IAEA, as a party to the NPT, discourages the nuclear supplier states from assisting the civilian nuclear aspirants in the region due to the probability of them following Iran's precedent. The conventional wisdom is that civilian nuclear cooperation does not lead to proliferation. Nuclear weapons spread when states have a demand for the bomb— not when they have the technical capacity to proliferate.

In March, the IAEA and Belgium convened a Nuclear Energy Summit in Brussels. Leaders from 32 countries and the European Union emphasized using nuclear power to achieve energy security and climate goals and drive sustainable development. Many countries in MENA from Egypt to Qatar and the UAE, strive for nuclear power plants. They need civilian nuclear cooperation— the transfer of nuclear technology, materials or knowledge from one state to another for civilian purposes—from the nuclear suppliers states.

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Pakistan opposes the horizontal nuclear proliferation in its Western neighborhood. Though Pakistan is not a party to NPT, it practices the treaties' norms and supports the increasing usage

of nuclear energy. Therefore, Islamabad desires Tehran's cooperation with the IAEA and to advance its civilian nuclear program within the framework of NPT. In summary, Iran's non-cooperation with the IAEA implies Tehran's inclination to develop nuclear weapons, which discourages civilian nuclear cooperation because the countries receiving civilian nuclear aid over time are more likely to initiate weapons programs and fabricate nuclear devices.

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Source: https://www. arabnews.com/node/2530016/amp, June 13, 2024.

OPINION – Rebeccah L. Heinrichs

America's New Nuclear Deterrence Era

In a speech earlier this month, senior National Security Council official Pranay Vaddi acknowledged a new, uncomfortable reality: For the first time ever, the United States must deter two nuclear peer adversaries. "The president recently issued updated nuclear weapons employment guidance, which takes into account the realities of a new nuclear era," Vaddi told the Arms Control Association in a speech on June 7. "It emphasizes the need to account for the growth and diversity of the PRC's nuclear arsenal—and the need to deter Russia, the PRC, and North Korea simultaneously." Considering President Biden has been cheerleading disarmament efforts for decades, this remarkable announcement speaks to the gravity of the nuclear threats. The White House's finding echoes the chief assessment of the bipartisan U.S. Strategic Posture Commission, on which I served as a commissioner.

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After the Cold War, the United States sought to rely less on nuclear weapons in its national defense strategy and instead focused on pursuing arms control and disarmament goals. The Russians were the only peer nuclear power, and Republican and Democrat administrations alike made investments in the U.S. nuclear deterrent on the assumption that relations between the U.S. and Russia were in a more productive and less adversarial period. Around 2009, when the last Strategic Posture Commission released its recommendations and when the United States was initiating its nuclear deterrent requirements, China had only a relatively modest nuclear arsenal. Strategy documents from around that time expressed cautious optimism that China would choose to engage in dialogue to build strategic stability, as a responsible state would.

Prior to ratifying the 2011 New START Treaty between the U.S. and Russia—which reduced both nations' strategic offensive weapons—the Senate, and especially Republican Senators, insisted that President Barack Obama provide full support for the modernization of the nation's nuclear deterrent. The hope was that future arms control with the Russians would also include restrictions on its theater-range nuclear weapons, which remain outside of New START. But since then, Russia violated the INF Treaty, abused the Open Skies Treaty, disregarded calls for responsible behavior in outer space, launched a

full-scale invasion of Ukraine, and announced it would not follow the New START Treaty. Moscow has chosen to assume an explicitly hostile posture toward the United States (and the post–Cold War democratic alliance system) while investing in novel nuclear systems and engaging in nuclear brinkmanship.

With the rise of Xi Jinping, China also has chosen an explicitly aggressive posture toward the U.S. and its allies to destabilize the global commons. Beijing, too, is rapidly expanding its nuclear weapons stockpile. China's nuclear buildup has outpaced U.S. intelligence estimates, and Beijing now has a triad of delivery systems: land-based ICBMs, airborne long-range bombers, and sea-based nuclear-armed submarines. It also has provocatively tested weapons such as the fractional orbiting bombardment system (FOBS). And it is refusing to engage in nuclear arms control talks or transparency measures.

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The risk of a confrontation between the United States and one or both nuclear adversaries is increasing. This was another finding of the bipartisan U.S. Strategic Posture Commission, which concluded in its October 2023 report that while the fundamentals of America's deterrence strategy remain sound, the "application of that strategy must change to address the 2027-2035 threat environment." The report urges the United States to "fully execute" the nuclear modernization program underway—overhauling its arsenal with new ICBMs, ballistic missile submarines, and warheads—and also recommended additional changes to prepare to meet the threats that have emerged since 2010. It is imperative that the United States complete the program underway because it is necessary even if insufficient to credibly deter both China and Russia. The nonpartisan consensus report has thankfully served as a wake-up call to the nation, lawmakers, and the Pentagon.

However, the ranking Democrat on the House Armed Services Committee, Washington Rep. Adam Smith, recently described the debate surrounding U.S. nuclear weapon policy as "stagnant." In a May 17 *Newsweek* op-ed, he argued that "momentum" is the main reason for the push to replace America's 40-year-old land-based intercontinental ballistic missile program with a new and admittedly expensive one called Sentinel. But momentum had nothing to do with the bipartisan decision, made under multiple presidential administrations, to invest in Sentinel, a vital aspect of the nuclear modernization program. There are decades of momentum resulting in the neglect of the nuclear force and the degradation of the nuclear enterprise. But study after study showed that the most cost-effective way to maintain a credible ICBM leg was through replacing it with Sentinel. But Smith, in defending his desire to not pursue the replacement of the decades old ICBM fleet, wrote that the Strategic Posture Commission concluded that the Defense Department should "pursue the feasibility of fielding some portion of the future ICBM force in a road mobile configuration." Surely Smith, one of the elected leaders who helped initiate the SPC and who entrusted it with fairness and rigorous analysis, knows that the SPC offered suggestions for future adaptations, but not as pretexts to interrupt or to derail the current modernization program.

Finally, the congressman asserted that the commission's recommendation that the Department of Defense invest more in conventional munitions was at odds with nuclear modernization. He said, "If the Sentinel program continues to balloon, these reductions to conventional systems are likely to increase as the Pentagon's top-line is unlikely to grow significantly." He is right to be concerned about the cuts to conventional systems, but the answer

is not to pay for these systems with one of the three legs of the nation's nuclear triad.

The overall defense budget is at historic lows as a percentage of the nation's GDP—and that's the uncomfortable reality. Mississippi's Roger Wicker, the ranking member of the Senate Armed Services Committee, recently introduced a plan to significantly increase the topline to the Pentagon's budget due in part to the challenges Smith has detected. The Wicker plan, dubbed the 21st Century Peace Through Strength report, is wise, given the nature of the China-Russia challenge and the high stakes. Deterring war—especially nuclear war against two nuclear peer adversaries—and preserving the American people and our way of life is and must remain the No. 1 priority of the U.S. government. We can afford to do this, but we cannot afford to fail.

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Source: https://thedispatch.com/article/americas-new-nuclear-deterrence-era/, June 18, 2024.

OPINION – Daniel DePetris

Should the US Increase its Nuclear Arsenal?

Is it time for the United States to increase its nuclear weapons stockpile? To arms control advocates, this is a dastardly, irresponsible question. But it isn't coming out of nowhere: Last week, a senior U.S. national security official left the door open to the first expansion of the U.S. nuclear warhead arsenal since the 1980s. On Friday, Pranay Vaddi, a senior director of the National Security Council, outlined the Biden administration's nuclear strategy during a speech at the Arms Control Association in Washington.

The speech wasn't surprising to anyone who has even a cursory understanding of U.S. nuclear weapons policy. Most of it was dedicated toward reiterating U.S. policy goals: getting more countries to decrease their nuclear arsenals, even as the U.S. ensures its own nuclear deterrent is updated. But the warning was as clear as day. "Absent a change in the trajectory of adversary arsenals," Vaddi said, "we may reach a point in the coming years where an increase from current deployed numbers is required."

Since the mid-1980s, successive U.S. administrations, Republican and Democratic, have largely based the country's nuclear weapons policy on two pillars: capping and if possible reducing nuclear arsenals across the board and making sure America's own is functional. U.S. officials have sought to discourage adversaries from attacking the U.S. and its treaty allies in Europe and Asia even as it gradually aspires toward a world in which nuclear weapons no longer exist. The proof is in the numbers: Since 1967, the U.S. nuclear weapons stockpile has decreased by 88%, from 31,255 warheads to 3,750. Yet in the eyes of U.S. officials in Washington, the state of affairs in the world is getting increasingly hairy. The kinds of arms control negotiations that were so prevalent since the latter years of the Cold War are all but dead. New START, the last major arms control accord signed between the U.S. and Russia, is essentially on life support after Russian President Vladimir Putin suspended it in 2023.

If anything, the war in Ukraine has only elevated the importance and value of nuclear weapons for Putin. With Russia's conventional military battered and bruised, Russia's strategic weapons systems are becoming much more important in Russian defense strategy. Moscow has not only moved tactical nuclear warheads to Belarus, next door to Ukraine, but also is pouring resources into diversifying its nuclear arms by adding more delivery systems. The Poseidon, a nuclear-armed intercontinental torpedo, is now one of Putin's most cherished weapons systems. (Whether it actually works is another story.) According to the

U.S. intelligence community, Russia is also testing components for a space-based nuclear anti-satellite weapon, which if used could wipe out hundreds of low-orbited satellites. Russia is hardly the only country the U.S. is concerned about on this front. China is doubling down on its nuclear arsenal to strengthen its own deterrent power. The Pentagon's most recent report analyzing Chinese military capabilities finds that "over the next decade, the PRC will continue to rapidly modernize, diversify, and expand its nuclear forces." China will have more than 1,000 operational nuclear warheads by 2030 — double its current arsenal.

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And although Beijing continues to claim a "no first use" policy — i.e., China won't be the first power to use a nuclear weapon under any circumstances — policies can change depending on the environment. Indeed, Chinese military documents leave open the prospect of junking this declaration in the event the Chinese People's Liberation Army is at risk of losing a conventional war. This is all quite concerning to U.S. officials, amplified by the fact that the United States has so many allies it has sworn to defend. Our extended deterrence commitments, in which Washington would theoretically escalate to the nuclear level to fight off an adversary who has attacked a U.S. ally, include most of Europe, Japan, South Korea and Australia. Extended deterrence, however, is a difficult promise to make credible: Would any U.S. president use nuclear weapons, for example, against Russia, China or even North Korea to defend an ally knowing that doing so would likely put American cities at risk of nuclear annihilation? Would the U.S. even fight a nuclear-armed country in these circumstances, knowing full well that a strictly conventional conflict could escalate to nuclear war?

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President Joe Biden's administration has apparently calculated that a larger U.S. nuclear arsenal is the cure-all to these problems. The underlying logic is straightforward: By increasing warhead numbers, nuclear adversaries such as China and Russia will eventually come to the conclusion that they simply can't outcompete the U.S. in this area and that throwing more money into a costly arms race is futile. If this sounds familiar, that's because it is; part of the rationale behind the military buildup in the 1980s by Ronald Reagan's administration was to bleed the Soviet Union financially. There's a cheaper and less risky way of accomplishing what the Biden administration wants to accomplish. But this would require U.S. officials to be self-reflective and recognize that adversary perceptions of U.S. motivations are driving much of Russia and China's nuclear modernization. Russia, for instance, is compensating for its conventional struggles in Ukraine and views nuclear weapons as absolutely essential to combating what it sees (rightly or wrongly) as U.S. attempts to weaken it over the long term. China, in part, is embracing nuclear expansion to scare the U.S. away from defending Taiwan if Beijing decides to subjugate the island militarily. A larger U.S. nuclear weapons arsenal is likely to heighten those threat perceptions, not eliminate them.

Source: https://www.citizensvoice.com/opinion/commentary-should-the-us-increase-its-nuclear-arsenal/article_bdd28323-8002-51eb-ac60-21e03ea24872.html, June 16, 2024.

NUCLEAR STRATEGY

GENERAL

World Spending on Nukes Explodes to More Than $90 Billion

Worldwide spending on nuclear weapons rose by $10.8 billion between 2022 and 2023 with 80% of the increase coming from the United States, according to a new report released on Monday by the ICAN. The $10.8 billion increase brings annual global spending on nuclear weapons up to $91.4 billion. From 2019 to 2023, $387 billion has been spent on nuclear weapons. "By comparison, the World Food Programme Executive Director stated in 2021 that to end world hunger, countries could spend $40 billion per year through 2030, which is a total of $360 billion over nine years," said the report, "Surge: 2023 Global Nuclear Weapons Spending."

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ICAN notes that sum is $27 billion less than what the U.S., China, Russia, the United Kingdom, France, India, Israel, North Korea and Pakistan spent on their nuclear arsenals in just five years. ICAN points to weapons companies as profiting off the surge in spending on nukes, noting that the top 20 companies working on nuclear weapons earned more than $31 billion from their nuke related work in 2023. And "[t]here are at least $335 billion in outstanding nuclear weapons contracts to these companies, some of which continue for more than a decade," said the report.

While the global total of nuclear warheads continues to fall as cold war-era weapons are gradually dismantled, regrettably we continue to see year-on-year increases in the number of operational nuclear warheads,' said Stockholm International Peace Research Institute Director Dan Smith, in a press release citing data from SIPRI's own report on nuclear weapons, also released on Monday. "This trend seems likely to continue and probably accelerate in the coming years and is extremely concerning.

Honeywell International, Northrop Grumman, BAE Systems, Lockheed Martin, and General Dynamics topped the list of companies profiting from nuclear weapons expenditures. That flood of public funds to private contractors was coupled by significant spending by these companies on efforts to shape the debate around government spending. The companies spent $118 million lobbying governments in the U.S. and France in 2023 and donated more than $6 million to think tanks researching and writing about nuclear weapons.

Lockheed Martin contributed to the most think tanks, including: Atlantic Council, Brookings Institution, Chatham House, Center for a New American Security, Center for Strategic and International Studies, Hudson Institute, and Observer Research Foundation. The increased spending on nuclear weapons hasn't corresponded to an increase in the absolute number of nuclear warheads, a number that has continued to decline since the end of the Cold War, but the number of nuclear weapons deployed for use with missiles and aircraft has gone up.

"While the global total of nuclear warheads continues to fall as cold war-era weapons are gradually dismantled, regrettably we continue to see year-on-year increases in the number of operational nuclear warheads,' said Stockholm International Peace Research Institute Director Dan Smith, in a press release citing data from SIPRI's own report on nuclear weapons, also released on Monday. "This trend seems likely to continue and probably accelerate in the coming years and is extremely concerning."

SIPRI points to tensions over the Ukraine and Gaza

wars weakening nuclear diplomacy. Last year, Russia suspended its participation in the last remaining treaty limiting Russia and U.S. strategic nuclear forces and the U.S. suspended sharing its own nuclear weapons data with Russia as required by the treaty. SIPRI also cites Russia's repeated threats of using nuclear weapons and the Israel-Hamas war, which upended an informal agreement between the U.S. and Iran to de-escalate tensions. That conflict has also undermined efforts to engage Israel — which has never acknowledged its nuclear weapons program — in the Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction, which has contributed to an overall weakening of nuclear diplomacy.

While nuclear weapons contractors are enjoying new contracts of billions of dollars in public funds, the overall outlook for constraining the use of nuclear weapons is looking much worse. "We have not seen nuclear weapons playing such a prominent role in international relations since the cold war," said Wilfred Wan, Director of SIPRI's Weapons of Mass Destruction Programme at the release of the new report. "It is hard to believe that barely two years have passed since the leaders of the five largest nuclear-armed states jointly reaffirmed that 'a nuclear war cannot be won and must never be fought.'"

Source: https://responsiblestatecraft.org/world-powers-increase-spending-on-nuclear-weapons/ , June 18, 2024.

Nuclear-armed Nations are Deepening Their Reliance on Their Nuclear Weapons, Watchdog Finds

The world's nine nuclear-armed states continue to modernize their nuclear weapons as the countries deepened their reliance on such deterrence in 2023, a Swedish think tank said. "We have not seen nuclear weapons playing such a prominent role in international relations since the Cold War," said Wilfred Wan, director of the SIPRI's WMD program. Earlier this month, Russia and its ally Belarus launched a second stage of drills intended to train their troops in tactical nuclear weapons, part of the Kremlin's efforts to discourage the West from ramping up support for Ukraine. In a separate report, the ICAN, said the nine nuclear-armed states spent a combined total of $91.4 billion on their arsenals in 2023 – equivalent to $2,898 per second. The Geneva-based coalition of disarmament activists won the Nobel Peace Prize in 2017.

The group said that figures show a $10.7 billion increase in global spending on nuclear weapons in 2023 compared to 2022, with the United States accounting for 80% of that increase. The U.S. share of total spending, $51.5 billion, is more than all the other nuclear-armed countries put together.

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However, it said that China is also believed to have some warheads on high operational alert for the first time. "Regrettably we continue to see year-on-year increases in the number of operational nuclear warheads," said Dan Smith, SIPRI's director. He added that the trend will likely accelerate in the coming years "and is extremely concerning." Russia and the United States have together almost

90% of all nuclear weapons, SIPRI said. The sizes of their military stockpiles seem to have remained relatively stable in 2023, although Russia is estimated to have deployed around 36 more warheads with operational forces than in January 2023, the watchdog added.

In its SIPRI Yearbook 2024, the institute said that transparency regarding nuclear forces has declined in both countries in the wake of Russia's full-scale invasion of Ukraine in February 2022, and debates around nuclear-sharing arrangements have increased in importance. Washington suspended its bilateral strategic stability dialogue with Russia, and last year Moscow announced that it was suspending its participation in the New START nuclear treaty. Of the total global inventory of an estimated 12,121 warheads in January, about 9,585 were in military stockpiles for potential use. An estimated 3,904 of those warheads were deployed with missiles and aircraft — which is 60 more than in January 2023 — and the rest were in central storage.

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In Asia, India, Pakistan and North Korea are all pursuing the capability to deploy multiple warheads on ballistic missiles, the institute said. The United States, Russia, France, UK and China already have that capacity, enabling a rapid potential increase in deployed warheads, as well as the possibility for nuclear-armed countries to threaten the destruction of significantly more targets. SIPRI stressed that all estimates were approximate, and the institute revises its world nuclear forces data each year based on new information and updates to earlier assessments.

Source: https://www.wytv.com/news/national-world/ap-international/ap-watchdog-nuclear-armed-nations-are-deepening-reliance-on-nuclear-weapons/, June 17, 2024.

NATO

NATO Discusses Bringing Nuclear Weapons into Combat Readiness

NATO Secretary General Jens Stoltenberg has said the Alliance is engaged in discussions regarding the deployment of more nuclear weapons due to the increasing threats posed by Russia and China. Details: Stoltenberg emphasised that NATO must demonstrate its nuclear arsenal to the world to send a direct message to its adversaries. He also stated that consultations are ongoing among NATO members regarding the withdrawal of missiles from storage and their readiness for deployment as a means of deterrence. "I won't go into operational details about how many nuclear warheads should be operational and which should be stored, but we need to consult on these issues. That's exactly what we're doing."

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Stoltenberg emphasised that nuclear transparency must be the basis of NATO's nuclear strategy to prepare the Alliance for what he described as "a more dangerous world". *The Telegraph* noted that nuclear exercises were conducted under strict secrecy when Stoltenberg took over NATO 10 years ago. Now, he openly praises NATO's 32 allies for their contributions to deterrence, including recent investments by the Netherlands in dual-capable fighter aircraft capable of carrying US nuclear weapons.

"Transparency helps to communicate the direct message that we, of course, are a nuclear alliance." "NATO's aim is, of course, a world

without nuclear weapons, but as long as nuclear weapons exist, we will remain a nuclear alliance, because a world where Russia, China and North Korea have nuclear weapons, and NATO does not, is a more dangerous world."

Stoltenberg warned that China, in particular, is investing substantial resources in modern weapons, including its nuclear arsenal, which he stated is expected to grow to 1,000 warheads by 2030. Quote: "And that means that in a not-very-distant future," he said, "Nato may face something that it has never faced before, and that is two nuclear-powered potential adversaries – China and Russia. Of course, this has consequences."

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Stoltenberg's warnings came after last week's G7 group sharply criticised China and Russia in a communiqué. It called on Beijing to halt military technology supplies to Moscow and opposed China's "militarisation" in the Pacific. The US and the UK have transferred their nuclear deterrence forces to NATO, while other European allies share the responsibility burden by keeping nuclear weapons on their territory and investing in launch systems. The number of active nuclear warheads is kept secret, but estimates suggest the UK has about 40 of the 225 that could be deployed at any time, while the US possesses around 1,700 of the 3,700. France, NATO's third nuclear state, does not place its atomic arsenal under the Alliance's command due to a longstanding decision to maintain independence in matters of deterrence. Stoltenberg emphasised that the US and their European allies are currently modernising their nuclear deterrent forces due to the increasing threats from Russia.

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"The US is modernising their gravity bombs for the nuclear warheads they have in Europe and European allies are modernising the planes which are going to be dedicated to NATO's nuclear mission." "Then, of course, you have the United Kingdom, which is special because the United Kingdom has its own nuclear weapons."

Stoltenberg refused to discuss how many warheads should be withdrawn from storage and brought into combat readiness but mentioned that consultations on this matter are ongoing in real-time mode. "The reality is that we all reduced defence spending when tensions went down after the end of the Cold War. And now we need to increase defence when tensions are going up again. I have been prime minister for 10 years, I know that it's hard to find money for defence because most politicians always prefer to spend money on health, on education, infrastructure and other important tasks." "But when we reduce defence spending when tensions go down, we have to be able to increase them when tensions go back up – and that's exactly what allies now are doing, the United Kingdom, but also other allies."

Source: https://www.pravda.com.ua/eng/news/2024/06/17/7461121/, June 17, 2024.

RUSSIA

Putin Calls for Resuming Production of Nuclear-Capable Intermediate Range Missiles

Russia is likely to restart the production of short and intermediate-range missiles, Russian President Vladimir Putin said, adding that the move is a direct response to the deployment of nuclear-capable missiles by the United States in

various parts of the world. The United States formally withdrew from the landmark 1987 INF Treaty with Russia in 2019 after saying that Moscow was violating the accord, an accusation the Kremlin denied.

Russia then imposed a moratorium on its own development of missiles previously banned by the INF treaty. "It is known that the United States not only produces these missile systems, but has already brought them to Europe for exercises in Denmark," Putin told a meeting of Russia's Security Council. "It was recently announced that they are in the Philippines. It is not known whether they took the missiles out of there or not." Putin said that Russia was thus forced to respond. "Apparently, we need to start manufacturing these strike systems and then, based on the actual situation, make decisions about where – if necessary to ensure our safety – to place them," Putin said.

Source: https://www.firstpost.com/world/putin-calls-for-resuming-production-of-nuclear-capable-intermediate-range-missiles-13787330.html, June 29, 2024.

USA

US Nuclear Attack Submarine Surfaces in Cuba Behind Russian Fleet

A U.S. Navy fast-attack submarine arrived in Cuba's Guantanamo Bay on Thursday (13 June), hard on the heels of a Russian flotilla's arrival in Havana 24 hours earlier. The USS Helena, one of around two dozen Los Angeles-class nuclear-powered, conventionally armed boats, was making "a routine port visit...while conducting its global maritime security and national defense mission," the U.S. Southern Command (SOUTHCOM) said in a statement on social media. On 13 June, Cuban armed forces welcomed the Russian Northern Fleet missile frigate Admiral Gorshkov with a 21-cannon salute as the fleet flagship led the Yasen-M-class cruise missile submarine Kazan into Havana Bay for a stopover from June 12-17. "None of the vessels carries nuclear weapons," Cuba's Foreign Ministry said earlier.

The visit, roughly 100 miles south of the Florida Keys, "does not represent any threat to the region," the Cuban government said. The U.S. Navy's Los Angeles-class submarines were built in the Cold War and are armed with torpedoes and Tomahawk and Harpoon missiles for land and sea targets. With nuclear propulsion effectively granting unlimited operational range, the Helena carries enough food and supplies to remain on station for an estimated three months, a period referred to as a vessel's "endurance." It is unusual for the United States and other countries to disclose the precise locations of their submarines, but surfacing a stealth boat sends an unmissable military signal to potential adversaries. Given the sub's arrival time, it is conceivable that it traveled the same waters used by the Russian Northern Fleet ships. "The vessel's location and transit were previously planned," SOUTHCOM's statement said. A U.S. defense official told Newsweek this week that American and Canadian naval and air forces had been "actively monitoring" the Russian ships as they crossed the Atlantic Ocean.

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...Russian ships visited Cuba every year from 2013-2020. This week's visit comes after President Vladimir Putin said his forces would take "asymmetrical steps" elsewhere in the world in response to President Joe Biden's decision to let Ukraine strike inside Russia using U.S.-supplied weapons. Biden and Ukrainian counterpart Volodymyr Zelensky met on the margins of the G7 summit in Italy on June 13 and signed a 10-year bilateral security agreement. ...

Source: https://www.newsweek.com/us-nuclear-powered-submarine-uss-helena-naval-base-guantanamo-bay-russia-fleet-cuba-havana-1912722, June 14, 2024.

BALLISTIC MISSLE DEFENCE

RUSSIA

Russia Deploys Prometheus Anti-Missile System to Crimea

Speaking to the TV telethon on June 12, Kyrylo Budanov, head of Ukraine's defense intelligence directorate (HUR) said Russia had already placed elements of their latest S-500 air defense missile system in Crimea and around the Kerch bridge that links the peninsula to the mainland. "This will, in principle, be an experimental application.... Kerch Bridge is always used, and as long as it's there, it will be used." He said that the move was "quite expected" since the Kremlin has been moving additional air defense assets on the peninsula to make up for the losses it has been suffering from Ukrainian long-range ATACMS ballistic missile attacks.

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In April, then-Russian Defense Minister Sergei Shoigu announced plans to deploy new air and missile defenses including the S-500 Prometheus, for which 10 were ordered in 2021, as well as additional S-400, S-300V4, Buk-M3, and Tor-M2U anti-aircraft missile systems, along with new generation radars "before the year's end." The emphasis on air defense systems highlighted the concern Moscow felt about the increase in Ukrainian capabilities from long-range missiles and drones. This has been given new urgency as Ukraine's Western allies authorized the use of their weapons against military targets on mainland Russia and the vulnerabilities they have exposed as a result. In the last week alone Ukraine's General Staff reported successful attacks against Russian S-300 and S-400 sites, one near Dzhankoy – a key road and rail hub in northern Crimea, and two sites near Chornomorske and Yevpatoria, in the west of the peninsula as well as a site in Russia's Belgorod region earlier in the month. Satellite imagery seemed to confirm that launchers, radar stations and command post were destroyed, for which Russian military bloggers say ATACMS were responsible.

The Prometey (Russian for Prometheus) system, also known as 55R6M Triumfator-M, is intended to provide theater ballistic missile defense and other long-range air defense cover. It was originally developed to provide a mobile, more flexible replacement for the A-135 ABM system deployed in silos around Moscow. It can also be configured for the air defense role.

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The S-500 consists of six separate but linked components: the 77P6 launch vehicle, 55K6MA and 85Zh6-2 command posts, the 91N6A(M) acquisition and battle management radar, the 96L6-TsP acquisition radar, the 76T6 multimode and 77T6 ABM engagement radars. The elements are all mounted on BAZ multi-wheeled trucks or trailers. It can fire either the 40N6M missile in the air defense role or the 77N6 / 77N6-N1 - anti-ballistic / anti-satellite missile. The latter is said to be a hypersonic interceptor missile but the experts

disagree on whether it is a "hittile" that uses a direct kinetic strike to destroy the target or one that explodes when comes into proximity with its target, hoping its fragmentation will damage the incoming missile sufficiently to destroy it.

Like many of the wonder weapons and latest systems Russia has deployed out of desperation in its war in Ukraine, they have yet to be proven in the field, often with a failure to replicate their performance during testing. The S-500, for instance, was said to have successfully hit an airborne target at a range of 482 kilometers (300 miles) during testing in 2018.

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Source: https://www.kyivpost.com/analysis/34339, June 15, 2024.

EMERGING TECHNOLOGIES AND DETERRENCE

USA

US Conducts Successful Hypersonic Test Bed Flight Experiment

The U.S. Missile Defense Agency (MDA) announced the successful flight of its Hypersonic Test Bed (HTB-1) in a recent experiment aimed at advancing hypersonic technology. The test, conducted in collaboration with various partners, marks a significant milestone in the development of affordable platforms for hypersonic experiments. During the test, HTB-1 was launched into hypersonic flight, allowing the collection of extensive data from both internal and external sources. This data is crucial for ongoing and future experiments in hypersonic environments. "This test was a substantial success for MDA and our partners, marking the start of an affordable test bed to conduct hypersonic experiments," said Lt. Gen. Heath Collins, MDA Director. "HTB-1 represents a pivotal step forward in enhancing our hypersonic testing capabilities."

The HTB concept aims to increase the overall testing capacity and speed of the U.S. in developing and delivering hypersonic technologies to military forces. The platform will enable the U.S. to pursue advanced technologies that operate reliably in hypersonic flight conditions. Additionally, the HTB-1 test provided an opportunity to evaluate the MDA's Hypersonic and Ballistic Tracking Space Sensor (HBTSS). Early results indicate successful data collection immediately after launch, with ongoing assessments to continue over the next several weeks.

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Source: https://defence-blog.com/us-conducts-successful-hypersonic-test-bed-flight-experiment/, June 15, 2024.

NUCLEAR ENERGY

INDIA

Hyderabad-Based MEIL Wins Landmark Rs 12,800 Crore Contract to Build Two Nuclear Reactors in Karnataka

Hyderabad-based Megha Engineering & Infrastructure Ltd (MEIL) has secured a contract

worth Rs 12,800 crore to construct two 700 MW nuclear reactors at Kaiga in Karnataka. The NPCIL invited tenders for this project on an engineering, procurement, and construction (EPC) basis in May 2023. The technical bids, which opened in October 2023, saw participation from BHEL and L&T alongside MEIL. "MEIL emerged as the lowest bidder, demonstrating its exceptional technical capabilities and cost-efficiency by submitting the lowest bid of Rs 12,799.92 crore," the company said in a statement.

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...According to MEIL, it is the highest value tender ever rolled out by the Nuclear Power Corporation of India. The project marks a groundbreaking moment with the introduction of the quality cum cost-based selection (QCBS) methodology, which ensured a rigorous evaluation of technical expertise and cost-effectiveness for all proposals, according to the release. ...

Source: https://swarajyamag.com/infrastructure/hyderabad-based-meil-wins-landmark-rs-12800-crore-contract-to-build-two-nuclear-reactors-in-karnataka, June 27, 2024.

India's Nuclear Power Expansion to Give Major Boost to Defense Capabilities

With the addition of seven new reactors, India has set a goal to increase its nuclear power generation capacity by 2029, according to the Science and Technology Ministry. India aims to rise its installed capacity by 70%, from the current 7.48 GW to 10.08 GW in the next five years, the Science and Technology Minister Jitendra Singh said. It will boost to the country's military defence capabilities as well as meeting the growing energy demand and reducing carbon emissions.

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The government is placing significant emphasis on the advancement of indigenous SMRs technology, including the Bharat Small Reactor (BSR) and Bharat Small Modular Reactor (BSMR) which can enhance the military defences in multiple ways, Kavya Wadhwa, a nuclear energy advocate and energy policy analyst, told Sputnik India.

"The inclusion of SMRs in India's nuclear power programme can supply power for various naval purposes, remote military installations, and offer adaptable power generation options," Wadhwa said. "SMRs also have the potential to decrease dependence on fossil fuels and foster the growth of domestic technology, thereby enhancing India's energy security and defensive capabilities."

Meanwhile, nuclear power, with its ability to provide a stable and continuous source of electricity, has been a game-changer for military installations and operations. According to Wadhwa, the SMRs have proven to be a valuable asset for naval fleet, citing the Advanced Technology Vessel project. He added that India has already shown its expertise in constructing small PWRs of approximately 83 MW for powering nuclear submarines as part of the programme. "The SMRs can offer a compact and efficient power

source that can be easily integrated into the unique space constraints of submarines, providing prolonged endurance and operational range" the expert stressed.

More Power to Military Bases and Defence Installations: The expansion of nuclear energy infrastructure is bolstering India's military bases, communication networks and logistical support systems, with a resilient energy supply unaffected by geopolitical tensions or shipment chain disruptions, the analyst believes. "SMRs have the potential to offer dependable power to remote military installations, enhancing operational readiness, even in demanding environments such as the Siachen glacier at the India-Pakistan border. It minimises the reliance on long-distance power transmission and strengthens energy security," Wadhwa said. He argued that the potential dual-use of nuclear technology could provide India with an edge in terms of nuclear propulsion for submarines and other strategic applications.

The SMRs have proven to be a valuable asset for naval fleet, citing the Advanced Technology Vessel project. He added that India has already shown its expertise in constructing small PWRs of approximately 83 MW for powering nuclear submarines as part of the programme. "The SMRs can offer a compact and efficient power source that can be easily integrated into the unique space constraints of submarines, providing prolonged endurance and operational range.

In the meantime, the expansion of nuclear energy generation capacity will not only help India become a self-reliant nation but can also frees up financial resources that can be redirected towards modernizing its military arsenal, enhancing cyber capabilities, and investing in cutting-edge defence technologies, the expert asserted. "Advancements can be leveraged to enhance India's military capabilities, including the development of advanced propulsion systems, radar technologies, and even the country's nuclear deterrent," Wadhwa concluded.

In the meantime, modern technology like SMRs, increased uranium imports and expedited domestic production which would also help India achieve the projected energy production in the near future have been undertaken by the government, Dr. Sitakanta Mishra, Associate Professor of International Relations at Pandit Deendayal Energy University (PDEU), told Sputnik India. He added that India is gearing up its nuclear energy sector with required legislative reforms, capacity building, and best practices through foreign collaborations. "Russia's Rosatom has remained a trusted partner in India's nuclear energy journey. It is in the best interest of both the countries to collaborate in advanced sectors like SMRs, modern reactor designs, and more reactor projects in the decades ahead" Mishra stressed.

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Source: Sangeeta Yadav, https://sputniknews.in/20240626/indias-nuclear-power-expansion-to-give-major-boost-to-defense-capabilities-7709163.html, June 26, 2024.

USA

US as Many as 15 Years Behind China on Nuclear Power, Report Says

The U.S. is as many as 15 years behind China on developing high-tech nuclear power as Beijing's state-backed technology approach and extensive financing give it the edge, a report said. China has 27 nuclear reactors under construction with average construction timelines of about seven years, far faster than other countries, said the study by Information Technology & Innovation

Foundation, a Washington-based nonpartisan research institute. "China's rapid deployment of ever-more modern nuclear power plants over time produces significant scale economies and learning-by-doing effects, and this suggests that Chinese enterprises will gain an advantage at incremental innovation in this sector going forward," the report said. The U.S. has the world's largest fleet of nuclear power plants and President Joe Biden's administration considers the virtually emissions-free electricity source to be critical in curbing climate change. But after two large plants in Georgia came online in 2023 and 2024 billions of dollars over budget and delayed by years, no U.S. nuclear reactors are being built. A high-tech plant that had been planned to be built at a U.S. lab was canceled last year.

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China's state-owned banks can offer loans as low as 1.4%, far lower than available in Western economies. Its nuclear power industry has benefited from sustained state support and localization strategies that has allowed China to dominate sectors like renewable power and EVs. The world's first so-called fourth-generation high-temperature gas cooled reactor at Shidao Bay came online last December. The China Nuclear Energy Association claims that the project involved the development of more than 2,200 sets of "world-first equipment" with a total localization rate of domestically produced materials of 93.4%. Backers of high-tech reactors say they are safer and more efficient than current plants. ...

Source: https://www.reuters.com/business/energy/us-many-15-years-behind-china-nuclear-power-report-says-2024-06-17/, June 17, 2024.

Californians Warned of $12 Billion Nuclear Bill

California-based utility company Pacific Gas & Electric (PG&E) is looking to spend nearly $12 billion to extend the life of its Diablo Canyon Power Plant until 2030 according to environmental group the Alliance for Nuclear Responsibility, a claim that has now been supported by campaign organization the Environmental Working Group (EWG). The EWG is urging California Gov. Gavin Newsom to withdraw his backing for a "limited-term extension" to the facility, now the only operational nuclear power station in California. However PG&E has insisted the $12 billion figure is inaccurate and the maximum cost will be $8.3 billion.

In September 2022 both chambers of the California Legislature approved a plan to extend Diablo Canyon's license to operate by five years, from an expiry date of 2025 to 2030, with a spokesperson for Newsom telling Newsweek closing the facility would put significant strain on the state's electricity network. However on June 13 the legislature voted to cancel a $400 million loan payment that had been intended to help finance Diablo Canyon's extension, amid concerns over the ballooning cost. Diablo Canyon nuclear facility, based in San Luis Obispo County, operates two nuclear units that produce "18,000 gigawatt-hours of clean and reliable electricity annually" according to its official website.

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On May 8 the Alliance for Nuclear Responsibility, which opposes the extension for Diablo Canyon, wrote a letter to the California Public Utilities Commission claiming PG&E's estimate for the cost of extending Diablo Canyon's operation until 2030

had risen from $5.2 billion in May 2023 to $8.1 billion 10 months later, then $11.8 billion in March. In the letter the alliance wrote: "PG&E's Application seeks approval of the first installment of what it currently 'forecasts' to be an $11.8 billion extended operations period for Diablo Canyon. This is a material increase from the $8.1 billion cost forecast PG&E provided in its July 28 2023 rebuttal testimony...not to mention the recanted $5.2 billion cost estimate in its May 19, 2023 opening testimony." The figure was repeated in an article published by the EWG, which said: "Now the public knows the actual price tag (at least what PG&E is currently admitting) is closer to $12 billion. And that figure excludes all of the enormously expensive safety improvements nuclear experts insist are needed for the two nuclear reactors."

However, speaking to CBS News a PG&E spokesperson contested the $11.8 billion figure, which they said included costs unrelated to extending Diablo Canyon. Instead they claimed the cost of the extension is pegged at $8.3 billion and that "the financial benefits exceed the costs."...

Source: https://www.newsweek.com/californians-warned-12-billion-nuclear-bill-1912725, June 14, 2024.

US Targets 200 GW Nuclear Expansion to Meet Soaring Energy Demand

With rising energy demands, nuclear power is gaining attention as a key component of the US's carbon-free energy strategy. The US Energy Department (DOE) aims to triple nuclear capacity by 2050, adding 200 GW to meet net zero emissions goals. Michael Goff, acting assistant secretary of the DOE's Office of Nuclear Energy, emphasizes the urgency of this expansion, noting that: "We are serious. We need to start deploying now."

Last month, the largest nuclear power operator in the country, Constellation Energy Corporation, revealed plans to explore the construction of new nuclear capacity at its reactor sites to address the rising energy demand of its data center clients. However, despite growing interest, the initial investment risk for new nuclear projects remains a significant hurdle.

Meeting Rising Energy Demands with Nuclear Power: Large-load customers like data centers and manufacturing are driving increased demand for carbon-free power, potentially steering utilities toward nuclear energy, per S&P Global report. Matt Crozat from the Nuclear Energy Institute (NEI) notes a significant rise in utility interest, particularly among those with existing nuclear fleets. Last month, the largest nuclear power operator in the country, Constellation Energy Corporation, revealed plans to explore the construction of new nuclear capacity at its reactor sites to address the rising energy demand of its data center clients. However, despite growing interest, the initial investment risk for new nuclear projects remains a significant hurdle.

The completion of two new reactors at Georgia's Vogtle Nuclear Plant, adding over 2,000 MW, has sparked optimism. Georgia Gov. Brian Kemp and other officials argue that this project proves new nuclear construction is feasible in the US. Energy Secretary Jennifer Granholm supports expanding the nuclear industry, suggesting more reactors should be planned, while also noting that: "We are determined to build a world-class nuclear industry in the United States, and we're putting our money where our mouth is.

Lynn Good, CEO of Duke Energy Corp., stresses the need for federal incentives to mitigate construction risks. Currently, federal support largely comes in the form of post-construction tax credits, which require operational plants to benefit. Good advocates for more robust support during the construction phase to balance the benefits and risks for consumers. The completion of two new reactors at Georgia's Vogtle Nuclear Plant, adding over 2,000 MW, has sparked optimism. Georgia Gov. Brian Kemp and other officials argue that this project proves new nuclear construction is feasible in the US. Energy

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Balancing Investment Risks and Federal Incentives: However, Southern Company, which oversaw the Vogtle expansion, has no immediate plans for further reactors. Georgia Public Service Commission member Tim Echols underscores the need for federal backstops against cost overruns before approving additional units. He believes that current incentives, including tax credits and loan guarantees, are insufficient, referencing the bankruptcy of Vogtle's contractor, Westinghouse, which caused significant industry concern.

This legislation offers multiple credits for new nuclear projects, including options to layer or sell credits and additional credits targeted at clean energy. These incentives have already helped secure lifetime extensions for existing nuclear plants. Existing nuclear plants are eligible for a production tax credit (PTC) of up to $15 per MWh.

The DOE's Goff acknowledges the challenge of increasing incentives further, noting the substantial existing support under the 2022 Inflation Reduction Act (IRA). This legislation offers multiple credits for new nuclear projects, including options to layer or sell credits and additional credits targeted at clean energy. These incentives have already helped secure lifetime extensions for existing nuclear plants. Existing nuclear plants are eligible for a production tax credit (PTC) of up to $15 per MWh. For new nuclear capacity, operators can choose between a PTC of $30/MWh or an investment tax credit (ITC) of 30%. This ITC can increase to as much as 50% if the nuclear projects use sufficient domestic content and are constructed in former coal plant communities.

AI applications could boost data center power needs by 160%, with AI queries like those from ChatGPT requiring nearly ten times more electricity than typical Google searches. Clayton Scott, chief commercial officer for NuScale Power, sees this as a perfect match for their small-scale nuclear systems. Scott believes the nuclear company can provide a solution with its SMRs, each generating 77 megawatts of carbon-free electricity.

Constellation Energy plans to renew operating licenses for all 23 of its reactors, with potential capacity increases qualifying for new capacity credits. This could lead to an additional 2.5 GW of nuclear capacity through uprates, according to NEI President Maria Korsnick. The federal government is also promoting nuclear energy through public-private partnerships, cost-share projects, loan guarantees, licensing assistance, and research initiatives. The Biden-Harris administration has issued a $1.52 billion loan guarantee to restart an 800-MW nuclear plant in Michigan.

Nuclear Energy for the Nation's Carbon-Free Power: The surge in AI applications is significantly increasing electricity demand for data centers, presenting a lucrative opportunity for developers of SMRs and advanced battery technologies. According to a Goldman Sachs report, AI applications could boost data center power needs by 160%, with AI queries like those from ChatGPT requiring nearly ten times more electricity than typical Google searches. Clayton Scott, chief commercial officer for NuScale Power, sees this as a perfect match for their small-scale nuclear systems. Scott believes the nuclear company can provide a solution with its SMRs, each generating 77 megawatts of carbon-free electricity.

However, these reactors won't be deployed until late in the decade, pending regulatory approval. The company reported minimal revenue and significant losses as it gears up for commercial operations. Microsoft, led by Bill Gates' TerraPower, is also exploring SMRs for powering AI data centers. Other startups, such as Oklo and

Helion, are developing innovative nuclear technologies, including fission reactors and nuclear fusion. While much of the industry's focus is on SMRs, none are yet commercially available for utility-scale power generation. Industry experts anticipate several applications for advanced reactors to be filed with the US Nuclear Regulatory Commission soon. However, the recent cancellation of the first modular project in Idaho and Vogtle's completion may shift financial risk assessments back toward larger reactors.

Large light-water reactors could become more prevalent in utility planning. Goff believes that there will still be demand for large-scale reactors. Overall, the completion of Vogtle's reactors and the supportive policy landscape indicate a growing openness to nuclear energy. As demand for carbon-free power continues to rise, nuclear power may play a crucial role in the US's energy future, provided that policy adjustments and incentives keep pace with industry needs.

Source: https://carboncredits.com/us-targets-200-gw-nuclear-expansion-to-meet-soaring-energy-demand/, June 17, 2024.

SMALL MODULAR REACTORS

GENERAL

The G7 Countries are Pushing for the Development of Micro-Reactors, Nuclear Power Can Improve Global Energy Security

G7 countries will promote research and development of innovative technologies for advanced and small-scale modular reactors, including micro-reactors, work collectively to enable greater access to project financing tools, and support sector collaboration. This is what we read in a passage of the final declaration of the summit Borgo Egnazia - which ends today -, according to which the G7 countries that choose to use nuclear energy, or support its use, "recognize its potential as a source of clean, zero-emission energy" and "reaffirm its potential in improve global energy security". Therefore, the statement underlines, the G7 "will continue to support cooperative efforts to responsibly strengthen the safety, reliability and resilience of nuclear supply chains, while promoting responsible waste management", supporting "the Japan's safe, transparent and science-based process to responsibly manage the discharge of water treated with the Advanced Liquid Treatment System and in proactive coordination with scientists and partners, as well as the IAEA.

According to the G7 countries, fusion energy technology has the potential to provide a lasting solution to the global challenges of climate change and energy security. "We will promote international collaborations to accelerate the development and demonstration of fusion facilities to foster private investment and public engagement. With this aim we commit to establishing a G7 working group on fusion energy. We will also work towards consistent approaches to merger regulations.

Taking note of the Global Declaration to triple global nuclear energy capacity by 2050, launched during Cop28 in Dubai last December, the seven most advanced economies commit to "further reduce dependence on civil nuclear power and related goods from Russia, including working to assist countries seeking to diversify their supplies," stressing that "the highest standards of nuclear safety and security are important for all countries and their citizens." According to the G7 countries, fusion energy technology has the potential to provide a lasting solution to the global challenges of climate change and energy security. "We will promote international collaborations to accelerate the development and demonstration of fusion facilities to foster private investment and public engagement. With this aim we commit to establishing a G7 working group on fusion energy. We will also work towards consistent approaches to merger regulations. To strengthen cooperation in this field – concludes the statement – we welcome the decision of Italy and the International Atomic Energy Agency to host the inaugural ministerial meeting of the World Fusion Energy Group in Rome."

Source: https://www.agenzianova.com/en/news/the-G7-countries-are-pushing-for-the-development-of-micro-reactors%2C-nuclear-power-can-improve-global-energy-security/, June 15, 2024.

USA

US Invests $900m to Ramp Up Deployment of Small Modular Reactors

The U.S. DOE has announced it will fund up to $900m to support the deployment of small modular reactors. The DOE issued a notice of intent to advance the development of Generation III+ small modular reactors, a move that will help the US increase its nuclear energy capabilities significantly. In addition to driving clean energy goals, investments in small modular reactors will help create skilled job opportunities and position the country as a global leader in nuclear power. Jennifer Granholm, US Secretary of Energy, commented: "President Biden is determined to ensure nuclear power—the nation's single largest source of carbon free electricity—continues to serve as a key pillar of our nation's transition to a safe and secure clean energy future. "Today's announcement will support early movers in the nuclear sector as we seek to scale up nuclear power and reassert American leadership in this critical energy industry."

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Importance of Nuclear Energy to the US: Nuclear power is the US' largest source of carbon free electricity, with the industry directly employing around 60,000 people nationwide and hundreds of thousands more indirectly. To reach net zero emissions by 2050, the DOE estimates the US will need an additional 700-900 GW of firm, clean energy capacity. Nuclear energy is a viable option to meet this demand, with small modular reactors holding the potential to unlock the US' nuclear potential.

Benefits of Small Modular Reactors: Small modular reactors are versatile and can be safely deployed in various settings, from remote areas to urban environments, due to their small footprint, modular design, factory construction, and established fuel supply chains. These features lower overall project costs. Small modular reactors can meet localised power demands, be scaled up for larger needs, or complement renewable energy sources.

How will the Funding be Used? The Consolidated Appropriations Act of 2024, funded by the President's Bipartisan Infrastructure Law, has enabled the DOE to offer funding in two tiers. Tier 1, managed by the Office of Clean Energy Demonstrations (OCED), will provide up to $800m to support up to two first-mover teams, including utilities, reactor vendors, constructors, and end-users, to deploy a first plant and facilitate a multi-reactor, Gen III+ orderbook. Tier 2, managed by the Office of Nuclear Energy (NE), will provide up to $100m to support additional Gen III+ deployments by addressing gaps in design, licensing, supplier development, and site preparation. The DOE plans to release a funding solicitation in late summer or autumn of 2024.

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Source: https://www. innovationnewsnetwork.com/us-invests-900m-into-deploying-small-modular-reactors/48577/, June 18, 2024.

NUCLEAR COOPERATION

USA–SAUDI ARABIA

US-Saudi Nuclear Deal Near, Congress Briefed on Details

National Security Council officials briefed members of Congress on a long-sought nuclear technology-sharing deal with Saudi Arabia that could let American companies build reactors in the kingdom, lawmakers said. Members of the Senate Foreign Affairs Committee received a classified briefing on the contours of the deal, Senator Jeff Merkley, an Oregon Democrat who serves on the panel said in an interview. A senior US official said last month the agreement was basically complete after years of negotiations.

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While it could boost Westinghouse Electric Co. and other American nuclear companies, it has alarmed non—proliferation experts and some members of Congress who worry it could allow the Saudis to enrich spent uranium into weapons-grade material. "I fear that Saudi Arabia — a nation with a terrible human rights record — cannot be trusted to use its civil nuclear energy program solely for peaceful purposes and will instead enrich uranium and seek to develop nuclear weapons," Senator Edward Markey, a Massachusetts Democrat, wrote in a letter last month to President Joe Biden.

Source: https://origin-pre-prod.livemint.com/companies/news/ussaudi-nuclear-deal-near- congress-briefed-on-details/amp-1171839004301 4.html?utm_source=perpetual_scroll&utm_medium=2, June 15, 2024.

NUCLEAR PROLIFERATION

CHINA

China's Nuclear Stockpile is Growing Faster Than Any Other Nation, Says New Security Report

China's nuclear arsenal increased by nearly 100 warheads over the last year, according to a new report published Monday that warned it expects Beijing's stockpile to keep growing at a faster rate than any other nation. Beijing's nuclear arsenal increased from 410 warheads to 500 over 2023, the Stockholm International Peace Research Institute said Monday in its annual report on international security. The institute added that while China's stockpile is expected to keep growing it may also be deploying a small number of warheads on missiles during peacetime. China is modernizing and expanding its nuclear arsenal, and the report warned that though it will have a smaller stockpile of nuclear warheads than Russia or the United States by the end of the decade, it could possibly have as may intercontinental ballistic missiles as them by then. "China is expanding its nuclear arsenal faster than any other country," Hans Kristensen, associate senior fellow with SIPRI's Weapons of Mass Destruction Program, said in a statement. "But in nearly all of the nuclear-armed states there are either plans or a significant push to increase nuclear forces."

while China's stockpile is expected to keep growing it may also be deploying a small number of warheads on missiles during peacetime. China is modernizing and expanding its nuclear arsenal, and the report warned that though it will have a smaller stockpile of nuclear warheads than Russia or the United States by the end of the decade, it could possibly have as may intercontinental ballistic missiles as them by then.

The report was published amid growing tensions in much of the world. Relations have continued fray between the West and China, and Russia's war in Ukraine as well as Israel's against Iran-backed Hamas in Gaza have raised worries about growing conflicts and about present conflicts turning nuclear.

According to the institute of the world's estimated 12,121 warheads, more than 9,500 were in military stockpiles for potential use with an estimated 3,904 having been deployed as of January 2024, representing an increase in 60 from a year earlier. It continued that some 2,100 of the deployed warheads were kept in a state of high operational alert and while nearly all belonged to either Russia or the United States — which account for 90% of all nuclear weapons — China is believed to have a few of them. Overall, the number of nuclear warheads continues to decline, but that is attributed to the United States and Russia dismantling older warheads while overall numbers are seeming to rise, it said. "While the global total of nuclear warheads continues to fall as Cold War-era weapons are gradually dismantled, regrettably we continue to see year-on-year increases in the number of operational nuclear warheads," SIPRI Director Dan Smith said in a statement.

"This trend seems likely to continue and probably accelerate in the coming years and is extremely concerning." Along with the United States, Russia and China, Britain, France, India, Pakistan, North Korea and Israel have nuclear weapons.

Source: https://www.upi.com/Top_News/World-News/2024/06/17/nuclear-arsenal-growing/3711718601938/, June 17, 2024.

IRAN

Iran's Regime Installing Hundreds of Centrifuges to Nuclear Facility, IAEA Warns

Reuters, citing a confidential report from the IAEA seen by the news agency, wrote that the Iran's regime informed the IAEA on June 10 and 11 that it would install eight cascades, each consisting of 174 IR-6 centrifuges, within three to four weeks at the Fordow facility. According to the report, the IAEA confirmed on June 11 that the Iranian regime had completed the installation of IR-6 centrifuges in two cascades at Fordow and that installation in four other cascades was ongoing. The confidential report on the Iranian regime's nuclear program has been sent to the members of the organization. The report also indicates that Iran, in a letter to the IAEA on June 11, announced its intention to install 18 cascades of IR-2m centrifuges at the underground Natanz enrichment facility.

According to Reuters, the Iranian regime has not specified the timing for this activity at Natanz. Tehran's new move comes a few days after the Board of Governors passed a resolution proposed by Britain, France, and Germany, known as the E3, on the Iranian regime's nuclear program with 20 votes in favor, 12 abstentions, and two votes against. The resolution calls on the Iranian regime to improve its cooperation with the IAEA and lift the ban on the entry of "experienced inspectors" from the agency. On September 17, 2023, the Iranian regime revoked the licenses of a group of IAEA inspectors to operate in Iran. ...

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Earlier, on June 12, Reuters, citing five IAEA diplomats, reported that the Iranian regime had increased its uranium enrichment capacity at Fordow and Natanz in response to the Board of Governors' resolution. Amir Saeid Iravani, Iran's ambassador and permanent representative to the United Nations, criticized the Board of Governors' action on June 6, stating that Tehran has adhered to its commitments under the NPT. In a letter to the UN Security Council, Iravani wrote: "The claim that Iran's nuclear program has reached a critical and irreversible point, along with claims that Iran's peaceful nuclear activities pose a threat to international peace and security, are completely false and baseless." Ali Shamkhani, political advisor to the Supreme Leader of Iran, Ali Khamenei, and a member of the Expediency Discernment Council, also called Britain, France, and Germany "misguided" on June 1 and threatened that Tehran would give a "serious and effective response" to their proposed resolution. ...

Source: https://iranfocus. com/nuclear/51381-irans-regime-installing-hundreds-of-centrifuges-to-nuclear-facility-iaea-warns/, June 14, 2024.

Iran Condemns G7 Claims Against its Nuclear Activities

Iranian Foreign Ministry Spokesman Nasser Kanaani slammed on Sunday the claims of the Group of Seven (G7) over the country's nuclear activities as anti-Tehran. Reacting to a G7 communique issued on Friday, Kanaani stressed in a statement that Iran's nuclear program is "exclusively peaceful." He said Iran would carry forward its "peaceful" nuclear projects and plans in line with the Non-Proliferation Treaty and safeguards agreement, regardless of political pressures and "propaganda campaigns." He said the communique's mention of an anti-Iran resolution of the Board of Governors of the IAEA was another proof of "the political approach pursued by those behind the resolution" and certain governments' "abuse" of international mechanisms against independent states.

Reacting to a G7 communique issued on Friday, Kanaani stressed in a statement that Iran's nuclear program is "exclusively peaceful." He said Iran would carry forward its "peaceful" nuclear projects and plans in line with the Non-Proliferation Treaty and safeguards agreement, regardless of political pressures and "propaganda campaigns.

The communique called on Tehran to "cease and reverse nuclear escalations," stop the continuing "uranium enrichment activities," engage in serious dialogue, provide convincing assurances that its nuclear program is exclusively peaceful, fully cooperate with the IAEA, and comply with the agency's monitoring and verification mechanism, "including the Board of Governors' resolution of June 5." The IAEA Board of Governors' resolution urged Iran to "step up cooperation with the IAEA and reverse its recent barring of inspectors." Kanaani regretted that some countries with "political motivations" made baseless and unproven claims to continue the failed policy of sanctions on Iran, advising the G7 members to refrain from using outdated, "destructive" policies. He stressed that the United States and the E3 group of France, Britain and Germany should give proof of their goodwill and refrain from taking "futile politically-motivated" measures against Iran. ...

Source: https://english. news.cn/20240616/793659 0d2168 4168b34a0 b215371e93b/c.html, June 16, 2024.

US Reacts as Iran Escalates Nuclear Program

The U.S. has promised to "respond accordingly" after Iran escalated its nuclear program by installing new advanced centrifuges to enrich uranium. Washington is concerned that Iran's latest advancements in its nuclear program "have no credible peaceful purpose," after investigations from the IAEA revealed that new infrastructure would mean Iran can produce uranium at greater speeds, in an enrichment close to weapons-grade capacity.

The IAEA Board of Governors' resolution urged Iran to "step up cooperation with the IAEA and reverse its recent barring of inspectors." Kanaani regretted that some countries with "political motivations" made baseless and unproven claims to continue the failed policy of sanctions on Iran, advising the G7 members to refrain from using outdated, "destructive" policies. He stressed that the United States and the E3 group of France, Britain and Germany should give proof of their goodwill and refrain from taking "futile politically-motivated" measures against Iran.

The escalation includes the start-up of new cascades of advanced centrifuges and plans to install additional ones, according to the Associated Press. The technology, grouped together in cascades, spins uranium gas together to more quickly enrich the uranium. The IAEA said that inspectors found that Iran had begun enriching uranium with advanced IR-4 and IR-6 centrifuges on Monday, at a previously identified facility in Natanz, a region to the south of Tehran in central Iran. Iran currently enriches uranium to a maximum of 60 per cent, with weapons-grade levels starting at 90 per cent A spokesperson from the IAEA told Newsweek that Iran had finished installing several advanced IR-6 centrifuges on

Tuesday, and was aiming to install more: "On 9 and 10 June, Iran informed the IAEA that eight cascades each containing 174 IR-6 centrifuges would be installed in Unit 1 of the Fordow Fuel Enrichment Plant (FFEP) within the next 3-4 weeks.

"On 11 June, Agency inspectors verified that Iran had completed the installation of IR-6 centrifuges in two of the cascades and that installation of IR-6 centrifuges in four additional cascades was ongoing." Officially, Iran has continued to maintain that it does not seek to developed a nuclear weapon. However, they retain enough uranium stockpiles for the equivalent of several weapons, and require only a few technical advances to bring their current program in line with those required for the production of nuclear bombs. With tensions between Iran and the West heightened by the conflict in Gaza, The U.S. State Department has taken a closer look at the expansion.

SALTO peer reviews can be carried out at any time during the lifetime of a nuclear power plant, although according to the IAEA the most suitable time lies within the last ten years of the plant's originally foreseen operating period. SALTO and OSART reviews are carried out at the request of the IAEA member country in which the review is to take place.

"Iran aims to continue expanding its nuclear program in ways that have no credible peaceful purpose," State Department spokesman Matthew Miller said in a statement shared with the AP. "These planned actions further undermine Iran's claims to the contrary. If Iran implements these plans, we will respond accordingly." The State Department also called for Iran to comply fully with the IAEA's investigations, stating: "The report issued today by the IAEA makes clear that Iran aims to continue expanding its nuclear program in ways that have no credible peaceful purpose.

These planned actions further undermine Iran's claims to the contrary. If Iran implements these plans, we will respond accordingly. "Iran must cooperate with the IAEA without further delay to fully implement its legally binding safeguards obligations. Until Iran does so, the IAEA Board of Governors will continue to hold Iran to account. We remain in close coordination with our partners and allies and are prepared to continue to increase pressure on Iran should its non-cooperation with the IAEA continue." There was no further clarification on what the consequences for Iran's expansion might be. The U.S. currently places heavy sanctions on them. ...

Source: https://www. newsweek.com/us-reacts-iran-nuclear-plans-escalations-1912776, June 14, 2024.

NUCLEAR SAFETY

BRAZIL

IAEA Assesses Long-Term Safety at Angra 1

The Safety Aspects of Long-Term Operation (SALTO) mission was requested by Eletronuclear, the owner and operator of the Angra plant. Two IAEA pre-SALTO missions in 2013 and 2018, followed by a pre-SALTO follow-up in 2022, were previously conducted to review the long-term safety of the unit. The 640 MWe pressurised water reactor was first connected to the grid in 1982. It entered commercial operation in 1985 and its current operating licence expires in December this year. Eletronuclear submitted a licence renewal application to the Brazilian Nuclear Regulatory Authority (CNEN) in 2019 to extend its operating lifetime from 40 to 60 years.

A SALTO peer review is a comprehensive safety review addressing strategy and key elements for the safe long-term operation of nuclear power plants. SALTO missions complement IAEA Operational Safety Review Team (OSART) missions which are designed as a review of programmes and activities essential to operational safety. SALTO peer reviews can be carried out at any time during the lifetime of a nuclear power plant, although according to the IAEA the most suitable time lies within the last ten years of the plant's originally foreseen operating period. SALTO and OSART reviews are carried out at the request of the IAEA member country in which the review is to take place. During the ten-day SALTO mission from 4 to 13 June, the team reviewed the plant's preparedness, organisation and programmes for safe long-term operation. The mission was conducted by a twelve-person team comprising experts from Argentina, Bulgaria, Finland, Japan, South Korea, the Netherlands, Slovakia, and the USA, as well

as two IAEA staff members.

"The team noted the progress in measures taken by the operator to ensure the safe LTO of the plant," said Gabor Petofi, team leader and IAEA Senior Nuclear Safety Officer. "The professionalism, openness and receptiveness for improvements to meet and move beyond the IAEA safety standards in operation are commendable." He added that "most of the ageing management and LTO activities are already in alignment with IAEA Safety Standards. We encourage the plant to address the review findings and proceed with the implementation of all remaining activities for safe LTO." The team provided recommendations to further enhance the preparations for safe LTO, including for the plant to consider: consistently addressing and implementing all ageing management programme attributes for civil structures; improving the process of temporary design modifications for LTO; and implementing a comprehensive equipment qualification programme.

... The team provided a draft report to the plant management and CNEN at the end of the mission. A final report will be submitted to plant management, CNEN and the Brazilian government within three months.

Source: https://www.world-nuclear-news.org/Articles/IAEA-assesses-long-term-safety-at-Angra-1, June 17, 2024.

UKRAINE

IAEA Reports Mine Explosion Close to Zaporizhzhia Cooling Pond

In his latest update on the situation at the six-unit nuclear power plant, which has been under Russian military control since early March 2022, Grossi said agency staff had "confirmed with the plant that one of the mines located next to the cooling pond area exploded on 11 June. There were no physical damage or casualties from the explosion and the cause of the explosion was not shared with the IAEA team".

"This latest explosion, so close to the plant, is of grave concern and is aggravating an already fragile situation ... nuclear safety and security of the ZNPP cannot be compromised," he said. Ahead of a Swiss-hosted summit on Ukraine, Grossi met Switzerland's Foreign Minister Ignazio Cassis to brief him on the work the IAEA is doing to try reduce the risk of a nuclear accident during the war and to urge the summit to "strengthen and support the unique, independent, and technical role of the IAEA".

Over the past week, the update says, IAEA staff visited an electrical substation in nearby Energodar which, according to those running the Zaporizhzhia nuclear plant, was damaged by shelling on 8 June. They also witnessed a successful test of safety systems at unit 2 and observed "the real-time monitoring system of the storage casks, containing spent fuel from all six reactors, at the ZNPP dry spent fuel storage facility". An emergency drill was held on 15 May and the IAEA team has been told the drill achieved its goals and "identified several valuable lessons...an action plan is being implemented to address the areas identified for improvement during the drill".

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Since the destruction of the Kakhovka dam a year ago, the need to supply enough cooling water to the Zaporizhzhia plant has continued to be an issue. The IAEA team were informed that the operators of the plant have installed a submersible pump near the isolation gate of the discharge channel of the Zaporizhzhia Thermal Power Plant, which can pump water to the cooling pond, which is also being fed by 11 groundwater wells. The IAEA teams at the three other Ukrainian nuclear power plants - Khmelnitsky, Rivne and South Ukraine - also rotated this week.

Source: https://world-nuclear-news.org/Articles/IAEA-reports-mine-explosion-close-to-Zaporizhzhia, June 14, 2024.

USA

New Reports Evaluate U.S. Readiness to Prevent, Counter, and Respond to Threats of Nuclear and Chemical Weapons of Mass Destruction

Two new reports from the National Academies of Sciences, Engineering, and Medicine review the adequacy of U.S. strategies to prevent, counter, and respond to the threat of nuclear and chemical terrorism and highlight the strengths and limitations of U.S. efforts to prevent and counter threats from WMD, particularly in a changing terrorism threat landscape. The reports provide recommendations for government leadership and interagency partners to better coordinate and communicate across counterterrorism efforts and to support prevention, countermeasure, response, and recovery programs.

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Authorized through a congressional mandate in the FY2021 National Defense Authorization Act, the National Academies reports examine the adequacy of U.S. strategies and capabilities for addressing state-sponsored and nonstate actors acquiring or misusing technologies and materials (including dual-use), and whether terrorist organizations can gain access to the critical expertise needed to carry out WMD attacks. Both reports highlight the need for the U.S. to look beyond a focus on international terrorist organizations, as the lines among domestic, foreign, nonstate, and state-supported terrorist groups have become increasingly blurred. Facilities storing nuclear materials or toxic industrial chemicals will remain potential targets for terrorism and insider threats, and the potential radicalization of individuals at those facilities requires the strengthening of insider threat programs.

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Nuclear Threats: Nuclear Terrorism: Assessment of U.S. Strategies to Prevent, Counter, and Respond to Weapons of Mass Destruction concludes that overall, U.S. efforts to counter nuclear or radiological terrorism will need renewed focus and increased investments to keep pace with the evolving threat landscape. Efforts to manage this risk should be expanded in a way that can be sustained by the many federal agencies that each have unique competencies and capabilities. The report recommends that the U.S. government reenergize the post 9/11 effort to combat terrorism through ongoing deep collaboration and coordination across the nuclear security community, with relevant domestic agencies, and with international partners.

The committee that wrote the report does not foresee an imminent terrorist attack with a nuclear weapon; however, several factors point to an increasing risk of such an attack. The trends of the past years show that domestic and international terrorist organizations are becoming more closely linked and difficult to differentiate. With added global interest in and expansion of the civil nuclear sector, as well as the decline of U.S. leadership in the civil nuclear space, the potential for these organizations to access nuclear material is increasing. In addition, preventing smuggled materials from entering the U.S. is challenged by ongoing supply chain security and border management issues. “For decades the U.S. has played an indispensable role in mobilizing and sustaining global efforts to advance nuclear security,” said Stephen Flynn, professor of political

science and founding director of the Global Resilience Institute at Northeastern University, and co-chair of the committee that wrote the nuclear threats report. "The U.S. must continue to lead, build trust, and strengthen the post- 9/11 domestic and international programs that have played an invaluable role in successfully managing the nuclear terrorism threat to date."

The report recommends that federal agencies evaluate whether the national security community has sufficient resources to manage and respond to the nuclear terrorism risk given that federal policy and funding have recently moved toward a greater focus on "great power competition" with Russia and China, which are increasingly challenging long-standing U.S.-led security arrangements in Europe and Asia. In addition, federal agencies should determine whether national anti-government and terrorist groups operating in the U.S. should be included on the list of Foreign Terrorist Organizations. The committee noted that as terrorist organizations are becoming more transnational, the distinction between foreign and domestic has blurred in some cases. Adding the domestic groups to the registry of foreign terrorists with which they have ties would make it illegal to join or financially support these domestic terrorist groups.

Efforts to manage this risk should be expanded in a way that can be sustained by the many federal agencies that each have unique competencies and capabilities. The report recommends that the U.S. government reenergize the post 9/11 effort to combat terrorism through ongoing deep collaboration and coordination across the nuclear security community, with relevant domestic agencies, and with international partners.

The report calls for a governmentwide effort, in partnership with the civil nuclear sector, to strengthen U.S. leadership in civil nuclear energy commerce and enhance global standards for safety, security, and materials control, including leading an international effort to enhance security in transportation and cargo. The report also provides recommendations for federal agencies, such as the Federal Emergency Management Agency, to work closely with leaders at the state and local levels to reinvigorate nuclear incident response and recovery capabilities. The report highlights how climate change mitigation efforts have intersected with different aspects of nuclear security. As the U.S. and other countries adapt to meet goals around carbon neutrality, nuclear material is likely become more dispersed, requiring more expansive international security measures.

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Chemical Threats: To date, domestic and foreign terrorist groups have caused more harm with chemical agents than with biological or radiological weapons, according to Chemical Terrorism: Assessment of U.S. Strategies in the Era of Great Power Competition. While the shift in the global threat landscape has led to a focus on great power competition, care should be taken to ensure that existing capabilities and attention on countering terrorism are maintained. The total number of chemicals that constitute or could constitute WMD terrorism threats is vast and continually expanding, the report says. ...

The U.S. has well-defined authority and organizational constructs for emergency response, including large-scale and chemical terrorism response. The extensive multiagency response capabilities are complexly governed, coordinated, and connected; however, a mass casualty, multipoint, or cross-jurisdiction incident could have an impact beyond current capabilities. The report identifies opportunities for improvements, but in the context of a national strategy focused on great power competition, it is difficult to recommend dramatic investments or changes. The report emphasizes

that approaches to identifying chemical threats could be strengthened by working on communication and coordination between local and state enforcement and the intelligence community. The committee recognized that the budgets at several agencies are inadequate to address the breadth of possible chemical threats, even for agencies for which WMD are a top priority.

The report provides eight budget recommendations that should be aligned with evolving priorities and enable updates on risk assessments. The majority of chemical incidents in the U.S. are not from terrorism, but from chemical releases due to transportation and other accidents or naturally occurring events. These incidents have created a robust emergency responder community with expertise to respond to most chemical incidents. Still, improvements are needed to integrate first responder input, include greater access to intelligence about incidents, and better interagency communication and coordination. The report recommends doing more to replace hazardous chemicals in industrial and academic settings with safer alternatives, as part of an overall strategy to reduce access to raw materials that could be used in chemical terrorism. Efforts to counter insider threats in the chemical domain should also be incorporated into broader strategies related to WMD. Given the critical role of U.S. Department of Homeland Security's Chemical Facility Anti-Terrorism Standards program in maintaining security measures within the chemical industry, the committee called upon Congress to reauthorize the program, which expired at the end of July 2023, and to consider long-term reauthorization.

Efforts to counter insider threats in the chemical domain should also be incorporated into broader strategies related to WMD. Given the critical role of U.S. Department of Homeland Security's Chemical Facility Anti-Terrorism Standards program in maintaining security measures within the chemical industry, the committee called upon Congress to reauthorize the program, which expired at the end of July 2023, and to consider long-term reauthorization.

The studies — undertaken by the Committee on Assessing and Improving Strategies for Preventing, Countering, and Responding to Weapons of Mass Destruction Terrorism: Nuclear Threats and Chemical Threats — were sponsored by the U.S. Department of Defense. The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, engineering, and medicine. They operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln.

Source: https://www. nationalacademies.org/news/2024/06/new-reports-evaluate-u-s-readiness-to-prevent-counter-and-respond-to-threats-of-nuclear-and-chemical-weapons-of-mass-destruction, June 18, 2024.

URANIUM PRODUCTION

KYRGYZSTAN

Environmentalists Raise Alarm About Resumption of Uranium Mining

The Kyrgyz parliament, the Jogorku Kenesh, earlier in June approved a government bill to lift a ban on the mining of uranium and thorium that had been in place since 2019. The new rules will go into effect after the law is signed by President Sadyr Japarov, as is widely expected soon. In pushing for a resumption of mining, the government contended that uranium production could supply a much needed financial infusion for the Kyrgyz economy, which has struggled to overcome disruption caused by the Covid pandemic and Russian sanctions.

Environmental activists in Kyrgyzstan are worried about the rising potential for a disaster following parliament's decision to resume uranium mining after a five-year hiatus. The Kyrgyz parliament, the Jogorku Kenesh, earlier in June approved a government bill to lift a ban on the mining of uranium and thorium that had been in place since 2019. The new rules will go into effect after the law is signed by President Sadyr Japarov, as is widely expected soon. In

pushing for a resumption of mining, the government contended that uranium production could supply a much needed financial infusion for the Kyrgyz economy, which has struggled to overcome disruption caused by the Covid pandemic and Russian sanctions. Japarov has stated the resumption of mining could create a $2bn windfall for state coffers. "We must continue to do any work that will provide even a small economic benefit to the state. Let's at least in the next 10 years reach the level of neighbouring countries," Japarov has said.

While casting mining as an economic imperative, the country's leadership has promised to use new technologies in the development of deposits to safeguard operations and maintain "strict environmental standards." Kyrgyzstan has a number of known uranium deposits that have not been exploited since the ban went into effect. Some of the largest deposits are found in environmentally sensitive areas, including adjacent to Lake Issyk-Kul, which is widely viewed by citizens as "the pearl of Kyrgyzstan."

Kyrgyzstan's interest in nuclear energy is an outgrowth of global warming and climate change, which is inhibiting the country's main generator of electricity, hydropower. The government's embrace of uranium mining and nuclear power has environmentalists on edge. The prospect of a nuclear reactor operating in a country prone to earthquakes is unsettling to many.

That lifting of the mining ban is seen by some environmentalists as paving the way for a nuclear power plant (NPP) in the Central Asian state. Officials are moving forward with efforts to build a reactor with the help of the Russian state-run entity, Rosatom. Kyrgyz officials have confirmed interest in building a SMR that could supply power for about one million citizens. Kyrgyzstan's interest in nuclear energy is an outgrowth of global warming and climate change, which is inhibiting the country's main generator of electricity, hydropower. The government's embrace of uranium mining and nuclear power has environmentalists on edge. The prospect of a nuclear reactor operating in a country prone to earthquakes is unsettling to many.

...Fears of new hazards and accidents aren't unjustified. On June 1, an accident in the Dzhumgal district of the Naryn Region saw a Rosatom truck careen into a river. The vehicle was involved in an ongoing operation to clean up uranium tailings. Officials at the Emergency Situations Ministry said the truck in question was empty at the time of the accident. But footage circulating on the internet appeared to contradict official accounts, seeming to show black sludge had spilled from the truck into the river. ...

Source: https://eurasianet.org/kyrgyzstan-environmentalists-raise-alarm-about-resumption-of-uranium-mining, June 18, 2024.

NIGER

Orano at Risk of Losing Niger Uranium Mine Sought by Russia

Orano could lose the right to mine uranium at one of the largest deposits in the world by June 19 after Niger rejected the French nuclear company's plan for developing the asset. The move comes as Russia's seeks to take over mining assets in the West African country controlled by the French company, Bloomberg reported on June 3. Niger's Paris-allied president was overthrown in a coup last July, the latest in a string of military takeovers in the region that has seen strongmen spurn ex-colonial power France and forge closer ties with Moscow.

Orano continues to operate a single large uranium mine in Niger but its proposed plan for the development of the Imouraren deposit "doesn't meet the authorities' expectations," Niger's mining ministry said in a letter seen by Bloomberg. A junta spokesman confirmed the letter dated June 11. "The second and final notice will end on June 19, after which date the company's operating permit will be revoked," the letter said. A Niger mining ministry official couldn't be reached for comment. An Orano spokesperson didn't respond to a request for comment. Imouraren is one of the world's biggest uranium deposits, with reserves estimated at 200000 tons. Niger's move

follows years of delays since Orano obtained the permit in 2009, according to the letter. ...Niger accounted for about 4% of global uranium mine production in 2022, according to the World Nuclear Association.

The move comes as Russia's seeks to take over mining assets in the West African country controlled by the French company, Bloomberg reported on June 3. Niger's Paris-allied president was overthrown in a coup last July, the latest in a string of military takeovers in the region that has seen strongmen spurn ex-colonial power France and forge closer ties with Moscow.

In April, 100 Russian military instructors arrived in the capital, Niamey, to train Niger's forces on how to use air defense systems supplied by Moscow. France has relied on Niger for as much as 15% of its uranium needs to fuel nuclear reactors that account for 65% of the country's electricity production, Le Monde reported last year, citing Orano. European Union utilities depended on Niger, the world's seventh-largest producer, for about a quarter of their uranium supplies in 2022, according to the Euratom Supply Agency. Orano has a majority stake in Imouraren SA with Niger's Sopamin SA controlling the remaining 33.35%. Orano currently operates Somaïr, an open-pit mine in the northern Arlit region, after the closure of Cominak in 2021.

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Source: https://www.miningweekly.com/article/orano-at-risk-of-losing-niger-uranium-mine-sought-by-russia-2024-06-18, June 18, 2024.

USA

Global Uranium Enters into Agreement to Purchase 100% of Five Uranium Projects in Wyoming, USA

Boss Energy (ASX:BOE,OTCQX:BQSSF) has officially begun uranium production at its Alta Mesa in-situ recovery central processing uranium plant and wellfields, located in South Texas. "The start of production at the Alta Mesa Project is another key milestone in the implementation of our strategy to be a global uranium supplier with a diversified production base in tier-one locations," said Managing Director Duncan Craib. "With operations now ramping up at both Honeymoon and Alta Mesa, we are on track to hit our combined nameplate production target of 3 million pounds of uranium per annum," he added in the June 14 announcement. This achievement comes just eight weeks after Boss Energy began production at its Honeymoon project in South Australia. Combined, the two operations are projected to produce approximately 3 million pounds of uranium annually. The start of production at Alta Mesa is a step in Boss Energy's plan to become a major uranium supplier.

The mine is expected to reach a steady state production rate of 1.5 million pounds of uranium per year. Boss Energy holds a 30 percent stake in the project, with the remaining 70 percent owned by enCore Energy (TSXV:EU,NASDAQ:EU). The start of production at Alta Mesa is particularly significant for the US uranium supply chain, with the market being impacted by the country's recently announced ban on Russian uranium imports. Alta Mesa's contribution to US uranium supply is expected to help mitigate the risks associated with reliance on foreign imports, ensuring a more stable and secure supply chain for the US nuclear energy sector. ...

Source: https://investingnews.com/boss-energy-starts-production/, June 17, 2024.

NUCLEAR WASTE MANAGEMENT

CANADA

No Timeline Change for Selecting Nuclear Waste Site

The Nuclear Waste Management Organization still intends to choose a site for its waste repository project by the end of this year, a regional

spokesperson for the industry-funded body said Tuesday. That's notwithstanding a newspaper's report indicating lukewarm support at best in First Nations near both final candidate sites. Neither Wabigoon Lake Ojibway Nation in the Northwest nor Saugeen Ojibway Nation near Lake Huron has yet scheduled a community vote related to the project, though Wabigoon Lake has said it will hold a vote in autumn.

The NWMO has said whichever site is chosen must have host communities that are "informed and willing to accept the project." But Vince Ponka, the NWMO's spokesperson, said the organization is sticking with its timeline for a site choice. "Our plan was always to make the decision by the end of this calendar year and we're still confident that we'll get those results by then," he said. One potential host municipality, Ignace in the Northwest, has held a community vote and agreed to report its decision to the NWMO by the end of July.

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The other municipality in the running, South Bruce in southwestern Ontario, will hold a referendum in October. Wabigoon Lake would be the host First Nation if the NWMO builds a deep geological repository, or DGR, south of Highway 17 and west of Ignace. Its chief, Clayton Wetelainen said, he hopes to see members vote on support for the project in the fall but the vote might take place later. The First Nation is still in talks with the nuclear organization on a hosting agreement, he said, and a hosting agreement must be in place before there's a vote. ...A few more months may be needed to reach an agreement with the NWMO, he said.

South Bruce in southwestern Ontario, will hold a referendum in October. Wabigoon Lake would be the host First Nation if the NWMO builds a deep geological repository, or DGR, south of Highway 17 and west of Ignace. Its chief, Clayton Wetelainen said, he hopes to see members vote on support for the project in the fall but the vote might take place later.

Saugeen, which includes the South Bruce site in its traditional territory, also has not reached a hosting agreement with the NWMO. A Saugeen official told the Globe and Mail a referendum of its members will be held once the First Nation has received enough information from the NWMO – and "we're at least halfway home to having our questions satisfied." The DGR is a proposed underground facility to put millions of used fuel bundles from Canada's nuclear power plants. Ponka said the NWMO's plan is for the repository to be constructed at either site by about 2034 and be in operation for well over 100 years with a total budget of $26 billion. Finland has built a similar repository, which delegations from Ignace, Wabigoon Lake and many other communities toured last year in junkets that the NWMO paid for.

Source: https://www.nwonewswatch.com/local-news/no-timeline-change-for-selecting-nuclear-waste-site-9102222, June 18, 2024.

FINLAND

Finland's Oldest Nuclear Reactor Decommissioned in Espoo: VTT Info

The FiR1 nuclear reactor, which operated for over fifty years in Espoo, Finland, has been decommissioned in collaboration with Fortum. This challenging project addressed numerous concrete issues and simultaneously established the national mechanism for nuclear decommissioning waste management process. The experiences gained will serve as a model for decommissioning commercial nuclear reactors in Finland as they reach the end of their operational life. The FiR1 research reactor was Finland's oldest nuclear reactor. Commissioned in 1962, the unit was used

for versatile research purposes and also served the healthcare sector. The reactor, with a thermal power of 250 kilowatts, did not produce electricity or heat for utilization.

Despite the reactor's small size, the FiR1 decommissioning project will domestically serve as a model for decommissioning commercial nuclear reactors and created new expertise for the benefit of VTT's and Fortum's international customers. "The process of decommissioning a nuclear reactor has now been comprehensively tested in Finland for the first time, taking into account the perspectives of various stakeholders. Significant actions were taken during the process, such as establishing a national waste management mechanism. Administratively, the same measures were implemented as would be required for decommissioning a large reactor," explains Markus Airila, VTT's principal scientist, who led the project and served as the decommissioning manager. The reactor was shut down in 2015, which initiated the licensing process for decommissioning and the planning for dismantling.

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In 2020, a significant milestone was reached when the spent fuel was transferred to the United States for further utilization. A total of 103 spent nuclear fuel rods, weighing approximately 300 kilograms, were removed from the reactor. Alongside the FiR1 project, VTT, in collaboration with several Finnish partners, also executed the dECOmm development project funded by Business Finland. This project used the decommissioning project as a test platform for various applicable technologies and has successfully achieved its initial goal of exporting technology. ...Having ambitious and measurable safety goals, the project brought together VTT's safety culture experts and the project leaders, facilitating an extraordinarily fruitful interaction. The experts closely supported the project lead in continuously enhancing the organization's safety culture, so they also gained hands-on experience from a real use case over several years. Now, VTT can use this experienced and cross-disciplinary team to offer unique safety culture support to other safety-critical projects.

Decommissioning Accelerated by Thorough Planning: In 2021, VTT received the decommissioning license for FiR1 from the Finnish government. Fortum, the main contractor, began dismantling in June 2023 and concluded the work in April 2024. Fortum's works on the project will continue with the final disposal of waste in the Loviisa power plant's final repository for low and intermediate-level waste. "The dismantling phase was very swift, thanks to thorough planning and preparatory work. Additionally, it was crucial that we could leverage the strong nuclear safety culture and expertise from Fortum's Loviisa nuclear power plant. Fortum handled everything safely, efficiently, and on schedule without significant delays," says Airila.

Despite the reactor's small size, the FiR1 decommissioning project will domestically serve as a model for decommissioning commercial nuclear reactors and created new expertise for the benefit of VTT's and Fortum's international customers. "The process of decommissioning a nuclear reactor has now been comprehensively tested in Finland for the first time, taking into account the perspectives of various stakeholders.

Dismantling amid Aalto University's Otaniemi campus posed its safety requirements in organising the dismantling site and the arrangement of necessary waste transports. The demolition waste which is classified as radioactive is being delivered for final disposal at Fortum's Loviisa nuclear power plant's low- and intermediate-level waste repository. A total of approximately 60 cubic meters of this waste, mainly concrete, was generated for delivery to the

Loviisa repository. A six-meter-high water tank and a two-meter-thick concrete shell surrounded the reactor. "For us at Fortum, this successful project is a testament to our extensive expertise, covering the entire lifecycle of a nuclear facility. We have executed a nuclear facility decommissioning project with the same quality and competence with which we have operated nuclear facilities and delivered projects for external customers over decades," says Antti Ketolainen, Fortum's director in charge of the project. A significant experience for both VTT and Fortum was the preparation of a decommissioning and dismantling plan required for the decommissioning license. Extensive documentation was produced and developed for this purpose.

The demolition waste which is classified as radioactive is being delivered for final disposal at Fortum's Loviisa nuclear power plant's low- and intermediate-level waste repository. A total of approximately 60 cubic meters of this waste, mainly concrete, was generated for delivery to the Loviisa repository. A six-meter-high water tank and a two-meter-thick concrete shell surrounded the reactor. "For us at Fortum, this successful project is a testament to our extensive expertise, covering the entire lifecycle of a nuclear facility.

Source: https://www.prnewswire.com/news-releases/finlands-oldest-nuclear-reactor-decommissioned-in-espoo-vtt-info-302175019.html, June 18, 2024.

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 Vice Marshal Anil Golani (Retd).

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