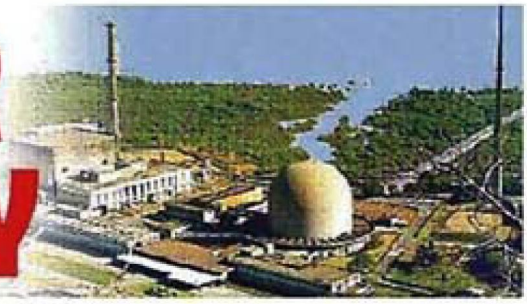
NUCLEAR SECURITY



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

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OPINION – Ajay Lele

China's Hypersonic Weapons Now an Integral Part of its Defense Strategy

On October 1, 2019 Chinese administration was at its best, when it displayed their military platforms and weapon systems during an impressive parade on the occasion of the 70th anniversary of its founding. It was a display of the social, cultural, economic, technological and military potential of China and also showcased various new types of missiles and unmanned platforms for the first time.

There were many attractions in the military display: from drones to underwater automatic vehicles to missiles to high-speed pilotless flying platforms which possibly can fly at supersonic speeds to various categories of missiles. Some 160 aircraft, missiles and 580 pieces of military equipment were displayed.

The major attraction was the ICBM and Hypersonic platforms. There was an ICBM called DF-41 which has a range of around 15,000 km and is known to have the capability to strike the US within 30 minutes. Then there was JL-2, SLBM, on display. This missile can be launched from a nuclear submarine "providing sea-based nuclear deterrence". In addition, there was YJ-18, an anti-ship and land-attack cruise missile.

The DF-17 medium-range ballistic missile is known to be the first missile designed to carry hypersonic glide vehicle. It is possible that this missile can hoodwink the US missile interceptors like their ship-based SM-3, ground-based systems like THAAD and Ground-Based Interceptors (GBI). The estimated range of DF-17 is between 1,800 and 2,500 km. With this range this missile could reach South Korea and Japan, challenging their missile defence network. Obviously, this missile can also reach India and in all possibilities should be able to deceive missile defence systems like the S-400.

One of the important missile systems displayed was a new hypersonic ballistic nuclear missile supposed to be capable of penetrating all existing anti-missile shields. The DF-17 medium-range ballistic missile is known to be the first missile designed to carry hypersonic glide vehicle. It is possible that this missile can hoodwink the US missile interceptors like their ship-based SM-3, ground-based systems like THAAD and Ground-

Based Interceptors (GBI). The estimated range of DF-17 is between 1,800 and 2,500 km. With this range this missile could reach South Korea and Japan, challenging their missile defence network. Obviously, this missile can also reach India and in all possibilities should be able to deceive missile defence systems like the S-400.

The speeds for flying platforms are normally mentioned in the unit called Mach and one Mach equals to the speed of sound in air. Supersonic speeds are in the range between 1.2 to 5 Mach. For a missile to attend hypersonic speeds it should fly at the speeds in the rage above Mach 5.0 till say 10.0 Mach (say 6,150-12,300 km/h).

China's interest and investments towards hypersonic vehicle development are known for the last seven-eight years. They have a DF-ZF (also known as WU-14) programme which is for hypersonic glide vehicle (HGV) development. Till date, they have conducted six to seven tests of the DF-ZF since its first test in 2014. The first test of the DF-17 ballistic missile took place on November 1, 2017. China has specifically designed DF-17 as a platform for operating their HGV. Other such platforms capable of operating with the HGV could include short-range DF-11 and DF-15, and the medium-range DF-21.

This vehicle-mounted DF-17 is considered to be a major technological accomplishment by China. It is expected to become fully operational by 2020. This hypersonic glide vehicle technology makes the missile to fly at a much lower altitude just before delivering its warhead. Obviously, this capability makes detection and interception of this weapon extremely difficult. Purely, in a ballistic missile mode, this weapon platform is also known to have MIRV capability, which allows delivering multiple warheads at different targets.

India also has an interest in developing hypersonic technology. Some limited efforts in that direction are known to be happening for almost a decade. DRDO and BrahMos Aerospace (a joint venture with Russia) are the main agencies involved in this type of research and have already developed few platforms too. The DRDO's prototype is known as the HSTDV (Hyper-Sonic Technology Demonstrator Vehicle), and BrahMos Aerospace is known to be developing the BrahMos-II. On June 12, 2019, HSTDV was tested by DRDO which was supposed to reach the speeds of Mach 6. Some reports indicate that this test was a partial success. BrahMos-II is a Hypersonic Cruise Missile and the first test of this missile (expected range: 500 to 600 km) could happen by 2020 and the missile is expected to become operational by 2025. It may be noted that DRDO has already developed (2011) a missile called Shaurya which is a canister launched the hypersonic surface-to-surface tactical missile (Mach 7.5). It has a range of 700 km and is capable of carrying a payload of one ton conventional or nuclear warhead.

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It is expected that nuclear-weapon states would make investments towards developing hypersonic weapons because such weapons could bring in more muscle to the overall nuclear deterrence capability. Hence along with the weapon development, the 'politics' of hypersonic technology could also dominate the future nuclear weapons debate. Already, there is a demand from few for banning such weapons since they are considered as destabilizing weapons.

China is possibly developing these and various other modern weapons as a part of their long-term plan, which typically gets deliberated as Anti-Access Area-Denial, or A2-AD. The implementation of such a strategy necessitates investment in a variety of missiles—both cruise and ballistic missiles. DF-17 hypersonic weapons is a part of this strategy.

Source: The Author is Senior Fellow, IDSA, New Delhi. Views expressed are personal, Financial Express, 07 October 2019.

OPINION – Toby Dalton

US-DPRK Nuclear Path after Stockholm

The US and North Korean negotiators met over the weekend in Stockholm, but could not bridge the gulf in ideas about the future of Pyongyang's nuclear arsenal and the benefits Pyongyang should gain from relinquishing it. The North Korean press release after the talks succinctly captures the problem: "It is not likely at all that (the US) can produce a proposal commensurate with the expectations of the DPRK."

North Korean leader Kim Jong Un seeks to be treated as a legitimate possessor of nuclear weapons, with all the assumed political benefits and sanctions relief that such a status might convey. Official Washington refuses to acknowledge that no amount of pressure or inducement will result in North Korea's unilateral disarmament. The chasm between America's political fantasy and North Korea's great expectations is vast.

North Korean leader Kim Jong Un seeks to be treated as a legitimate possessor of nuclear weapons, with all the assumed political benefits and sanctions relief that such a status might convey. Official Washington refuses to acknowledge that no amount of pressure or inducement will result in North Korea's unilateral disarmament. The chasm between America's political fantasy and North Korea's great expectations is vast.

North Korea's apparently successful test of a new, solid-fuel missile launched from an undersea platform on the eve of the Stockholm meeting sent a clear message: Pyongyang plans to retain nuclear weapons for the foreseeable future, come what may. United Nations Security Council sanctions and other forms of pressure will not compel North Korea to abandon this objective.

Yet it is not clear what North Korea's leaders believe will happen if the international community acquiesces to Pyongyang's desired nuclear status. For all the supposed power they convey, nuclear weapons make for poor instruments of blackmail. Weak states with nuclear weapons may gain some protection against predation from powerful states, but nuclear weapons cannot resolve the underlying sources of weakness. Nuclear weapons have not made Pakistan wealthier, safer, or internally stronger, even if they preclude an invasion by India, for example.

North Korea could return to testing nuclear weapons and intercontinental ballistic missiles in 2020, when Kim's self-imposed year-end deadline for progress in talks with Washington expires. Such resumed testing — and the corresponding potential for miscalculation or accident — will attract more international opprobrium, but is unlikely to persuade the international community to relieve UN sanctions. If Kim has a plan for how to turn nuclear weapons into economic development and international political strength without negotiating with Washington, it is not apparent.

For all the supposed power they convey, nuclear weapons make for poor instruments of blackmail. Weak states with nuclear weapons may gain some protection against predation from powerful states, but nuclear weapons cannot resolve the underlying sources of weakness. Nuclear weapons have not made Pakistan wealthier, safer, or internally stronger, even if they preclude an invasion by India.

Meanwhile, the continued inadequacy of US policy toward North Korea is plain to see. US-led maximum pressure cannot produce disarmament. Putative offers of economic and security inducements from Washington are not credible. Rather than seek a more realistic and less ambitious near-term option — a verifiable cap on North Korea's arsenal, for instance — both Republicans and Democrats prefer to continue demanding the unattainable outcome of total denuclearization. That way, they avoid the political costs of negotiating a compromise "bad" deal, even as Pyongyang's continued nuclear development makes the world less safe.

From here, two likely paths diverge, assuming Stockholm was the final meeting for working-level negotiators. Path one: irreconcilable differences drive Trump and Kim to break up. In 2020, North Korea returns to periodically rattling the world with nuclear or missile tests, while the US avoids reckoning with policy failure in order to keep its principled position. Path two: Trump and Kim meet for a fourth time, perhaps in Pyongyang. Without expert preparation, however, a "big deal" that satisfies both parties is less likely than a vaguely worded sequel to the June 2018 Singapore summit statement. Ultimately, artful compromise between right sized North Korean expectations and American political realities is the necessary path forward. Compromise will be politically difficult, but is far safer than the alternatives.

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Source: Toby Dalton is co-director of the Nuclear Policy Program and senior fellow at the Carnegie Endowment for International Peace in Washington, Kyodo News, 08 October 2019.

OPINION – The Economic Times

Chinese Parade a Glimpse into Military Ambitions

A parade by China's secretive military offer[ed] a rare look at its rapidly developing arsenal, including possibly a nuclear-armed missile that could reach the United States in 30 minutes, as Beijing gets closer to matching Washington and other powers in weapons technology.

Last year's spending on the PLA rose 5 per cent to USD 250 billion, or about 10 times its 1994 level, according to SIPRI. The United States, with a force of 1.3 million, was far ahead at USD 650 billion, or more than 2½ times China's level.

... The PLA, the world's biggest military with 2 million men and women in uniform and the second-highest annual spending after the United States, also is working on fighter planes, the first Chinese-built aircraft carrier and nuclear-powered submarines. "There are quite a lot of observers, including the US military, who say, 'This is getting close to what we do,' and they are starting to worry," said Siemon Wezeman of the SIPRI. ...

... The ability to project power is increasingly urgent for Chinese leaders who want to control shipping lanes and waters also claimed by Japan, South Korea, Vietnam, the Philippines and other governments. "China has developed nuclear, space, cyberspace and other capabilities that can reach potential adversaries across the globe," the US Defense Intelligence Agency said in a report in January. Last year's spending on the PLA rose 5 per cent to USD 250 billion, or about 10 times its 1994 level, according to SIPRI. The United States, with a force of 1.3 million, was far ahead at USD 650 billion, or more than 2½ times China's level.

Beijing is regarded, along with the United States, as a leader in drone aircraft, which it sells in the Middle East. "In unpiloted aerial vehicles, China has made a lot of progress in recent years and has a vast array of systems under development," said Harry Boyd of the International Institute for Strategic Studies in London.

No details of the Dongfeng 41 have been released, but ... it may have the world's longest range at 15,000 kilometers (9,400 miles). Analysts say the DF-41, flying at 25 times the speed of sound, might be able to reach the United States in 30 minutes with up to 10 warheads for separate targets — a technology known as MIRV.

China's current mainstay missile, the Dongfeng 31, has a range of more than 11,200 kilometers (6,990 miles) that puts most of the continental United States within reach. Photos circulated on

Chinese social media of parade preparations show blurry images of a possible attack drone dubbed "Sharp Sword" and another drone, the DR-8 or Wuzhen 8. ...Analysts want to know about Chinese software, electronics and wireless control networks, said Wezeman. ...China has about 280 nuclear warheads, compared with 6,450 for the United States and 6,850 for Russia, according to SIPRI. Beijing says it wants a "minimum credible nuclear deterrent" but won't be the first to use atomic weapons in a conflict. Mobile launchers "would make it more difficult for any potential enemy to do a first strike," said Boyd.

Satellite photos show China is increasing the number of launchers for DF-41 and DF-31 missiles from 18 to as many as 36. That suggests planners believe that minimum nuclear force "needs to be larger". "It needs to have more advanced systems with MIRV capability to remain credible, in their eyes.

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Xi's demonstration will serve as fodder for the argument that Beijing's growing arsenal must be constrained by bringing China into future US-Russia arms control talks. "Beijing can no longer credibly make the case that its forces are so small—and intended only for a secure, retaliatory deterrent—that they need not be included in arms-control negotiations.

Source: https://economictimes.indiatimes.com, 30 September 2019.

OPINION – Ankit Panda

Trump's Nuclear China Option

On October 1, Chinese President Xi Jinping preside[d] over a major military parade in Beijing to commemorate the seventieth anniversary of the founding of the People's Republic of China. ... For the Trump administration and its supporters on the Hill, Xi's demonstration will serve as fodder for the argument that Beijing's growing arsenal must be constrained by bringing China into future US-Russia arms control talks. "Beijing can no longer credibly make the case that its forces are so small—and intended only for a secure, retaliatory deterrent—that they need not be included in arms-control negotiations" two former Bush administration officials wrote in the National Review last spring, seeking to make this case.

Don't buy it. While China's ever-advancing capabilities are a cause for concern, proposals to "trilateralize" nuclear arms control are nothing more than a poison pill for existing bilateral arrangements, like the 2011 New START between Washington and Moscow. China won't join such an arrangement, and pursuing this objective—as the Trump administration has indicated it might—will be a wild goose chase.

As the demise of the 1987 INF Treaty earlier this year underscored, global arms control is in trouble. The US and Russia are trying to squeeze through a fast-closing window to extend New START, the only major accord standing between mutual nuclear restraint and a potential renewed Cold War–style arms race. The treaty limits the countries' deployed strategic nuclear weapons to a total of 1,550 and restricts their delivery methods (i.e., missiles and bombers) as well. The treaty succeeded in verifiably reducing the two countries' arsenals; both sides announced they had met the reduction requirements in February 2018.

The treaty is set to expire in February 2021. A single five-year extension is possible. If Moscow and Washington fail to agree on an extension, however, the treaty's limits on nuclear arms would expire. The Trump administration has indicated some interest in an extension, which should be a no-brainer, given the benefits to US security. But this is where China can potentially complicate matters.

Trump's Reckless New Missile Race: His withdrawal from the INF Treaty will spur a rush to build new arsenals with no plan for how to use them. The idea of bringing China into New START, or something like it, has begun to creep into the president's mind. In May, Republican Senators Tom Cotton of Arkansas and John Cornyn of Texas—along with Liz Cheney, Wyoming's sole congressional representative—introduced legislation that would, among other things, withhold funding for any extension of New START without China's participation in the agreement. "America deserves better than a mere New START extension," Cheney said in a statement touting the bill. "Any meaningful arms control treaty must reflect reality as it is" and address "the threat emanating from China," she added.

These days, "great power competition" is all the rage in Washington. The Trump administration's 2017 National Security Strategy declared that "great power competition" has returned, and China and Russia in particular have begun to "reassert their influence regionally and globally." The 2018 National Defense Strategy calls China a "strategic competitor.

In early May, Trump told reporters—falsely—that he had spoken to Chinese officials already about a trilateral arrangement and that "they very much would like to be a part of that deal." Beijing swiftly denied that account just days later, saying they would "not take part in any trilateral negotiations on a nuclear disarmament agreement." (The denial followed earlier pushback by Chinese officials against suggestions that Beijing join a trilateral version of the now-dead Intermediate-Range Nuclear Forces Treaty between Russia and the US)

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While Russia and China are tossed into the mental bucket of "great power" competitors, their nuclear forces and strategies are nothing alike. China possess an order of magnitude fewer nuclear weapons than either the US or Russia; compare inventories of roughly 300 warheads in China to arsenals of 6,000-plus in Russia and the US How China manages its nuclear weapons in peacetime also doesn't lend itself to an arrangement like New START. That treaty's rules for counting "deployed" warheads concentrate on how many nuclear explosive packages are sitting, ready, atop launchable missiles. China, which has sought to make its 1964 commitment to nuclear "no first-use" credible in peacetime, keeps its warheads and missiles miles apart in peacetime, meaning its deployed warheads number zero, or pretty close to it.

That's just one example of the impracticality of the trilateralization proposal. Legally speaking, there's also no mechanism in New START to simply add a third party into the agreement. The choice Washington and Moscow face is to either extend the treaty for five years or to allow it to expire. If trilateral strategic nuclear arms control is of interest, the three countries will have to start from scratch. With China having ruled this out, the whole idea is nothing but a poison pill for New START's extension. Proponents of a trilateral New START are seeking the resumption of a costly and dangerous open-ended arms race, which will benefit no one but the defense contractors lucky enough to find themselves involved in the production of new nuclear weapons.

All that said, China is entering the nuclear big leagues with the US and will soon need to contend

with its nuclear-armed older siblings. Part of the push for the US to leave the now-dead INF treaty had to do with concerns about China: The People's Liberation Army Rocket Force comprises hundreds of missiles that the US had been prohibited from possessing for 32 years under the INF accord. As US-China competition in Asia intensifies, newly unfettered US missile deployments may create the conditions for Beijing to reassess its interests.

Something like parity would need to exist for a US-Russia-style arms-control process to begin with China. That would mean either Beijing pushing its nuclear arsenal up to where the US is, or Washington continuing to disarm alongside Moscow until both reach China's lower levels. Neither of these two possible futures are around the corner.

But strategic arms control with China just isn't something that's likely to happen soon. Lt. Gen. Robert P. Ashley, Jr., the director of the US Defense Intelligence Agency, may be right that "China is likely to at least double the size of its nuclear stockpile" over the next decade, but that would still position Beijing less than halfway to where the US might be under an extended New START. Something like parity would need to exist for a US-Russia-style arms-control process to begin with China. That would mean either Beijing pushing its nuclear arsenal up to where the US is, or Washington continuing to disarm alongside Moscow until both reach China's lower levels. Neither of these two possible futures are around the corner.

Keep all of this in perspective when Xi Jinping shows off some of Beijing's new capabilities during the October 1 parade and US hawks have a freakout. Even as "great power competition" talk takes hold and US-China relations grow pricklier than ever, that relationship's nuclear hazards pale next to where they might be if the Trump administration and the Russian government allow New START to expire in two years.

Source: https://newrepublic.com/, 30 September 2019.

OPINION – Samuele Furfari

Europe Needs a Serious Nuclear-Energy Debate

Last month, the Akademik Lomonosov, Russia's first floating nuclear power plant, arrived in the remote town of Pevek in the country's Siberian Arctic region. Russian state-run nuclear energy company Rosatom sees this as a pilot project, and hopes eventually to deploy a fleet of such units in Russia and elsewhere – including in developing countries in Asia and Africa that urgently need affordable electricity.

The Lomonosov builds on a long tradition of nuclear-powered icebreakers in the Arctic Ocean. But, as I explain in my book on energy geopolitics, it also is a cutting-edge example of how small modular reactors (SMRs) can be deployed more easily, flexibly, and cost-effectively than traditional nuclear facilities.

SMRs hold out the promise of clean energy production not only in remote areas, but also in developing countries that are not equipped to build bespoke nuclear power plants on land. Floating SMR technologies also could potentially be used in commercial shipping in the thawing Arctic: nuclear-powered container ships would be far cleaner than those powered by heavy fuel oil, which produces emissions of sulfur and heavy metals. Furthermore, growing economic activity throughout the Arctic makes it increasingly important for remote areas like Pevek to have low-carbon energy sources.

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Although the Lomonosov will be the world's smallest and most northerly nuclear plant when it comes online, it may soon have competition. Researchers in the United States, South Korea,

Russia, France, China, Argentina, Japan, and India are currently working on about 50 different SMR designs. Furthermore, the rapid changes in the Arctic, and the global push to replace fossil fuels with low-carbon energy sources, have led Chinese, French, and American researchers to join their Russian counterparts in assessing the prospects for sea-based nuclear power.

Seaborne nuclear reactors are hardly a new concept. The US used an ex-World War II cargo ship equipped with a nuclear reactor to generate power for the Panama Canal from 1968 to 1976, and Russia's fleet of nuclear-powered icebreakers uses the same type of reactor as the Lomonosov. These reactors already meet IAEA requirements.

Unfortunately, Western media have failed to recognize the importance of the Lomonosov. Instead, inflammatory and misleading language from Greenpeace and other environmental groups has led to breathless reporting on the launch of a "nuclear Titanic" and "Chernobyl on ice."

Greenpeace, which has always opposed nuclear energy because of its supposed risks to the environment and humans, has highlighted the remote location of the Lomonosov and the unpredictable Arctic climate. As with many other nuclear projects in recent decades, the group has again succeeded in framing the terms of debate. But those with actual nuclear expertise have made it clear that Greenpeace's scare tactics have "no basis in science."

As industry experts have repeatedly pointed out, seaborne nuclear reactors are hardly a new concept. The US used an ex-World War II cargo ship equipped with a nuclear reactor to generate power for the Panama Canal from 1968 to 1976, and Russia's fleet of nuclear-powered icebreakers uses the same type of reactor as the Lomonosov. These reactors already meet IAEA requirements, with safety measures including double containment and passive reactor vessel cooldown systems. In fact, offshore nuclear reactors could even be safer than those on land, because cold water facilitates the rapid cooling of the unit in case of emergencies.

Sadly, the primacy of anti-nuclear sentiment over empirical fact has been a consistent feature of Europe's nuclear-power debate since the 1980s. In 1997, for example, France abandoned its own advanced Superphénix "breeder reactor" project because incoming Prime Minister Lionel Jospin required the support of the Green Party to form a government.

Two decades later, France still has not successfully developed the technology. And just last month, the country's Alternative Energies and Atomic Energy Commission decided to abandon the fourth-generation advanced sodium technological reactor for industrial demonstration (ASTRID) that had been launched in 2006 to replace Superphénix.

By succumbing to anti-nuclear pressure from groups such as Greenpeace, Western policymakers have failed to keep pace with Russia and China. Russia's Rosatom, for example, is already a global leader in marketing nuclear energy to emerging economies, and has over a hundred projects in countries including India, China, and Belarus.

According to the UNIPCC, nuclear power generation is second only to onshore wind in terms of carbon neutrality, with median carbon dioxide emissions of just 12 grams per kilowatt hour (kWh) of electricity generation. Those concerned about CO2 emissions should therefore prefer nuclear energy to fossil fuels such as coal (820 grams/kWh) and natural gas (490 grams/kWh). Nuclear also outperforms biomass (230 grams/kWh), solar energy (48 grams/kWh), and hydropower (24 grams/kWh).

The alarmist rhetoric surrounding today's emerging nuclear technology is unfortunately par for the course. And it again highlights the contradictory and self-defeating approach of some Western policymakers to the world's largest and most reliable source of low-carbon energy.

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about CO2 emissions should therefore prefer nuclear energy to fossil fuels such as coal (820 grams/kWh) and natural gas (490 grams/kWh). Nuclear also outperforms biomass (230 grams/kWh), solar energy (48 grams/kWh), and hydropower (24 grams/kWh). In addition, nuclear power has none of the intermittency problems that plague wind and solar energy, causing ongoing price increases for consumers.

These differences come into sharp focus when we consider the effect of German Chancellor Angela Merkel's Energiewende policy, which aims to increase the country's renewable energy capacity while phasing out nuclear power. The Energiewende is often lauded as one of Europe's leading sustainability initiatives. Yet, in Germany's rush to move away from nuclear power following the 2011 nuclear accident in Fukushima, Japan, the country's energy sector has had to rely on coal for baseload power.

Pressure from German environmentalists helped drive this decision – but using nuclear energy instead of coal would have resulted in Germany releasing approximately 220 million fewer tons of CO2 per year. In fact, since 1990, Germany has managed to achieve only a slow, uneven decline in CO2 emissions, despite a manifold increase in renewable energy capacity. While Germany continues to phase out its nuclear industry, the Akademik Lomonosov highlights the potential for nuclear-power generation in the Arctic. What Europe in particular needs now is a sensible nuclear-energy debate based on facts rather than fear.

Source: Samuele Furfari is a professor of the geopolitics of energy at Université libre de Bruxelles. https://www.project-syndicate.org, 11 October 2019.

NUCLEAR STRATEGY

USA

The US is Rethinking the 50-plus Nuclear Weapons it Keeps in Turkey

Turkish forces are pushing into northern Syria, replacing and sometimes even firing on the US troops retreating at Donald Trump's orders. The question of whether Turkey, a member of the NATO, is really a US ally was put to US defense secretary Mark Esper on Fox television this morning. "No, I think Turkey, the arc of their behavior over the past several years has been terrible," he said.

The US is storing perhaps 50 air-dropped thermonuclear bombs at its Incirlik Airbase in southern Turkey, less than 100 miles from the Syrian border where this conflict is taking place. The nuclear stockpile dates back to the Cold War, when the US sought to keep a sufficient supply of atomic weapons deployed in Europe to deter potential Soviet aggression. Belgium, the Netherlands, Germany, and Italy also host similar arsenals.

Which brings up a problem: The US is storing perhaps 50 air-dropped thermonuclear bombs at its Incirlik Airbase in southern Turkey, less than 100 miles from the Syrian border where this conflict is taking place. The nuclear stockpile dates back to the Cold War, when the US sought to keep a sufficient supply of atomic weapons deployed in Europe to deter potential Soviet aggression. Belgium, the Netherlands, Germany, and Italy also host similar arsenals, and the US trains the participating nations in the use of the doomsday devices.

Today, these bombs remain in place largely because of inertia, and the hope that countries like Turkey will see the depot as sufficient reason not to develop nuclear weapons of their own. It doesn't seem to be working: Last month, Turkish president Recep Tayyip Erdogan said he could "not accept" efforts to prevent Turkey from developing its own atomic bombs.

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But instability in Turkey and the region, along with Ankara's close relationship with Russia, have had American strategists talking about re-locating their

weapons for years. (The US does not officially discuss the arsenal, but there is no indication that the stockpile has been removed.)

A 2016 coup attempt against Erdogan saw power to the base cut off for several days, raising questions about the safety of the stash. More recently, Turkey has purchased advanced air defense technology from Russia, which has raised hackles in the US defense community because Turkey also operates the US F-35 fighter-bomber. The Air Force is worried that Russia will be able to learn from Turkey how to better shoot down US aircraft.

Now, Russia and Turkey are coordinating military policy in northern Syria, with the US as a bystander. The move to exploit a civil conflict in Syria to gain a geopolitical advantage typify how strategists see a new era of great power competition playing out. One reason to be worried is that the recent shift in US strategy launched by Trump appears to have caught the US military establishment by surprise. It's not clear how prepared the US is to deal with the knock-on effects of the about-face, whether it is disappointed former allies like the Kurds (paywall) or ISIS fighters escaping from prison camps, much less the calculus of nuclear deterrence.

Source: Tim Fernholz, https://qz.com/1727158/us-rethinking-the-50-plus-nuclear-weapons-it-keeps-in-turkey/, 13 October 2019.

BALLISTIC MISSILE DEFENCE

RUSSIA–CHINA

Russia is Helping China Build a New Missile Attack Warning System

Russia is helping China build a new missile attack warning system, Russian President Vladimir Putin announced. Neither Putin nor Russia's major weapons manufacturer, which confirmed the deal ... revealed any further details about the system or conditions of the agreement, or when it might be operational.

"We are currently helping our Chinese partners to create a missile attack warning system. It's a serious thing that will drastically increase the defense capabilities of the People's Republic of China," Putin announced at a political conference in Sochi...."Right now only the US and Russia have such systems." ...

... Sergei Boyev, director general of Vympel, Russia's major weapons manufacturer, confirmed to Russia's state-run media that the company was working on "modelling" the system for China. Boyev designed Russia's missile attack warning system. "We can't talk in detail about it because of confidentiality agreements," Boyev said.

Russia's missile attack warning system was built to detect attacks on state and military command posts, and with its incorporated satellites, provides data to Moscow's missile defense system as well as for the country's space monitoring system. The Kremlin decision to help China build a similar system was not unexpected.

Russia's missile attack warning system was built to detect attacks on state and military command posts, and with its incorporated satellites, provides data to Moscow's missile defense system as well as for the country's space monitoring system. The Kremlin decision to help China build a similar system was not unexpected, foreign affairs analyst Vladimir Frolov told CBS News, noting that it "has been quietly discussed for the past several years."

According to Frolov, the move could be seen as a response to US plans to deploy intermediate range missiles in Asia, and it is likely to lead to deeper cooperation with China on creating an integrated missile defense system. Russia is effectively creating a military alliance with China, Frolov told CBS News, thus lessening the possibility of military clashes between the two countries and raising the stakes should any other geopolitical power, including the US, decide to oppose either. ...

Source: https://www.cbsnews.com/, 04 October 2019.

NUCLEAR ENERGY

BELARUS

Physical Launch of Belarus NPP First Unit may Take Place in January

The physical launch of the first unit of the Astravets NPP is scheduled for January 2020,

Director General of the state enterprise Belarusian Nuclear Power Plant Mikhail Filimonau told journalists .... "The physical launch is in the offing. It is expected to be held in January or so. Setting a definite date will be reliant on launch operations. Then it will be connected to the power grid," the official said.

According to him, nuclear fuel for the first unit may be delivered by the end of 2019, state-run news agency BelTA reports. In turn, Vasil Palyukhovich, Director of the Nuclear Power Engineering Department of the Belarusian Energy Ministry, stressed that the exact date of the start would depend on when nuclear fuel was delivered and inspected. On 24 September 2019, Alexei Likhachev, Director General of the Russian State Atomic Energy Corporation Rosatom, said that the first BelNPP power unit is in 'the highest degree of technical readiness' (97%).

Neighbouring Lithuania has repeatedly criticized the construction of the nuclear power plant and encouraged the rest of the countries of the United Europe to not buy electricity from the would-be NPP. The Lithuanians are not only concerned about the proximity of the station to Vilnius, but also with a number of emergencies during the NPP construction. For example, in 2017, while moving the reactor vessel for the first unit of BelNPP, workers let it slip out and touch the ground.

Lithuania has repeatedly criticized the construction of the nuclear power plant and encouraged the rest of the countries of the United Europe to not buy electricity from the would-be NPP. The Lithuanians are not only concerned about the proximity of the station to Vilnius, but also with a number of emergencies during the NPP construction.

In July 2019, during construction work at the Astravets NPP, the 59-year-old and 23-year-old workers fell from a height as a result of a breakdown in the work of the truck tower, sustaining serious injuries. The recent scandal surrounding the construction of the Belarusian nuclear power plant was connected with the Russian builders not receiving salaries for their work.

As reported earlier, the department of the Investigation Committee (IC) in Hrodna region is investigating a criminal case launched under Article 252 of the Criminal Code (commercial bribery) against the head of the ventilation and firefighting systems of the Russian company Atomstroyexport, Oleg Zinoviev. The agency notes that his poor quality work has led to the situation where the ventilation equipment, as well as the aggregates and valves to suppress fire at the station, were installed without passing the necessary control checks. According to the IC, violations may lead to 'whole system failure' at the Astravets nuclear power plant.

Source: https://belsat.eu/en/, 09 October 2019.

CHINA

Chinese Diplomat Touts Nuclear Energy as a Cure to Climate Change

China believes that in the fight against climate change, nuclear energy will play a bigger role as a low-carbon, green and clean base-load energy.... Nuclear energy's low level of live-cycle carbon emission "makes it a key solution to cutting emissions," said Wang Qun, Chinese envoy to the UN and other International Organizations in Vienna, at a side event of the ongoing International Conference on Climate Change and the Role of Nuclear Power.

"Despite the twists and turns in the way of utilizing atomic energy, we are convinced that the atomic energy is one of the greatest discoveries in the 20th century that lay a solid foundation for sustainable development of mankind," Wang said. "The Chinese government supports the IAEA's goal of Atoms for Peace and Development. And China, for its part, will work closely with the agency and other members to develop nuclear energy in a sound, steady, and sustainable way," he said.

China has taken multipronged steps to make the energy structure clean, low-carbon, safe and efficient, and the transition of its energy production and consumption has been

subsequently brought to a new level, he said. In 2018, for example, China's carbon emission per unit GDP decreased 45.8 percent from the 2005 level, meeting the annual target with a reduction of 5.26 billion tons of C02 emission. In the same year, the share of non-fossil fuels in primary energy consumption reached 14.3 percent, he said..."In the light of our national energy plan, we will continue to develop nuclear energy in a safe, efficient and sustainable manner and further increase its share in our primary energy," Wang said....

Source: http://www. khaosodenglish. com/, 09 October 2019.

USA

Southern Research to Develop Smart Robots for Next-Gen Nuclear Reactors under DOE Grant

The US Department of Energy (DOE) has awarded a team led by Southern Research a $2.8 million grant to develop smart maintenance robots that will work autonomously in the challenging conditions inside next-generation nuclear reactors. The team working on the project, funded by DOE's Advanced Research Projects Agency-Energy (ARPA-E), will use artificial intelligence and machine learning to train the robots to complete maintenance tasks at a future molten salt reactor (MSR) large component test facility.

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Autonomous maintenance is seen as an enabling capability to making MSR technology economically viable as a safe, carbon-free energy source, according to Robert Amaro, Ph.D., a mechanical engineer and advanced manufacturing specialist at Southern Research's Engineering division.

"The MSR technology is very promising because of its inherent safety, but the high-temperature, high-radiation environment makes it necessary to remotely maintain the reactor. Training robots to perform maintenance tasks is a key capability in the development of these reactors," Amaro said.

...As the project's program manager, Amaro will prepare the robots for their mission, but what is unusual about this project is that the robots will be trained in a virtual environment, using machine learning to execute a range of routine maintenance tasks. The operator would provide high-level guidance to the smart robots but would not have to direct each specific task they perform in the MSR, Amaro said.

The success of this project promises to significantly advance future nuclear power generation. On the project, Southern Research has partnered with Oak Ridge National Laboratory, the creator of the original MSR technology; PaR Systems, a leading manufacturer of automation and robotic technology used in nuclear facilities; Intuitive Research and Technology Corp., which specializes in 3-D virtual training environments; DEFT Dynamics, an innovative small business developing real-time feedback for robots and manipulators; and Southern Company, a leading energy company based in Atlanta and the parent of Alabama Power.

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The project supports a proposed concept being explored by Southern Company R&D to develop a molten salt large component test facility in conjunction with its efforts to advance Generation IV nuclear energy systems. Southern Company and TerraPower, a nuclear startup founded by Bill Gates, received funding in 2016 as part of an ongoing effort to develop a Molten Chloride Fast Reactor that uses liquid salts as both a coolant and fuel.

Southern Company will assist the Southern Research team by providing 3-D modeling of the future test facility to help the robot training efforts. It will also provide oversight to ensure the technology developed by Southern Research is applicable to MSR technology.

China and Russia are developing deep cooperation in the field of nuclear power and have expansive room for further growth. Russia has rich experience in the production and construction of advanced nuclear power units, The official detailed that both sides have been working actively on the construction of the Tianwan and Xudabao nuclear power plants in China.

"Southern Research has put together a strong technical team for this project, and this is a great opportunity for the organization to become part of a large, collaborative, industry-leading effort to develop next-generation nuclear power for the clean, safe, reliable and affordable generation of electricity," said Nick Irvin, Southern Company director of research strategy, next-generation nuclear and crosscutting R&D.

Though MSR technology has never been commercialized, it was first developed as an experiment at the Oak Ridge National Laboratory in the 1960s. Now, almost 60 years later, the technology is seen by many as an energy system for the future. Interest has been rekindled in MSR technology because it offers a zero-carbon energy resource that operates at high temperatures and low pressure using a nonreactive coolant. And these reactors are capable of being designed and scaled for both small- and large-scale deployments.

Engineers have a discussion in the control room of a conventional nuclear power station. A project to develop smart maintenance robots at Southern Research, under a $2.8 million grant from the US Department of Energy, has the potential to enable significant advances in a new "Generation IV" nuclear technology that uses liquid salts as a zero-carbon energy resource. The robots would be trained to perform routine maintenance tasks.

Collaborations: For Birmingham-based Southern Research, the project is groundbreaking in a number of ways, said Corey Tyree, senior director of Southern Research's Energy and Environment division. It's the organization's first large-scale nuclear project and the first time it's been funded by ARPA-E, a government agency that typically funds higher-risk projects that have a greater impact and a higher reward in the energy sector.

For Southern Research, it also represents the first major collaboration between its Engineering and Energy & Environment divisions on a project of this magnitude, he added. ...Both Amaro and Tyree agree that the development of this autonomous robot technology can better position Southern Research for new industrial partnerships looking for applications in advanced manufacturing as well as applications supporting the nation's space program, where a similar skill set may be required to perform complex tasks in hostile environments.

Source: https://alabamanewscenter.com/, 07 October 2019.

NUCLEAR COOPERATION

CHINA–RUSSIA

Beijing Wants to Work with Russia on Nuclear Power Plants in China and Wind Projects in Arctic

Beijing is seeking greater energy cooperation with Moscow in Russia's Arctic region, according to Ou Xiaoming, chief representative of China's State Grid (the national power company). "China and Russia are developing deep cooperation in the field

of nuclear power and have expansive room for further growth. Russia has rich experience in the production and construction of advanced nuclear power units," he said. The official detailed that both sides have been working actively on the construction of the Tianwan and Xudabao nuclear power plants in China....The State Grid executive added that China hopes to raise the contribution of non-fossil energy to the nation's energy mix above 50 percent by 2050.

Moscow and Beijing have been strengthening ties in the nuclear energy sector. Rosatom is building nuclear units for the Tianwan nuclear power plant, which is one of the biggest joint projects of economic cooperation. Agreement to work together on the Tianwan reaches back to 1992.The first two of its units, each with a capacity of 1,000MW, were launched in 2007. Unit 3 began operations in 2017, and the reactor at the latest, fourth unit was launched at minimum capacity in September of last year after the fuel loading was finished ahead of schedule. As part of the biggest deal between the two countries, the construction of two Russian VVER-1200 units worth a total of $1.7 billion is planned at China's Xudabao nuclear power plant.

Source: https://www. rt.com/, 08 October 2019.
RUSSIA–CUBA

Russia Expresses Interest in Nuclear Energy Projects in Cuba

A senior Russian official suggested that Moscow could be a top partner to Cuba should it ever decide to build a nuclear power plant, the island independent outlet Cuba net reported recently... the latest ploy to expand Rosatom's reach into underdeveloped allied nations.

Rosatom has signed deals with several African nations to develop large nuclear power plant complexes, raising concerns about the safety of the region given the risks of placing tons of nuclear material in countries with unstable governments. Russia has also suffered several prominent nuclear accidents in the past two months, elevating skepticism that it can guarantee the security of nuclear facilities.

The issue of atomic research came up in relation to a visit by Russian PM to Havana, where he spent most of his trip denouncing American sanctions on the repressive communist regime there. Medvedev himself did not mention nuclear energy but, according to the Russian government websites RT and Sputnik, first deputy head of the Russian Government Office Sergei Prikhodko did.

... A major hurdle for Moscow is that Cuba reportedly has no interest in spending money on an elaborate nuclear energy sector, despite the fact that the communist regime's dilapidated energy grid is on the verge of collapse, causing regular blackouts throughout the country. As our Cuban colleagues had informed us, they have no plans of creating nuclear power generation industry in the country, Prikhodko said. If this decision is reviewed, then naturally, Russia will be ready to become Cuba's strategic partner in this direction. At present, we are discussing a wide range of so-called non-energy use of peaceful atom

...At Cubanet, columnist Pedro Manuel González Reinoso notes two major hurdles to Cuba's acceptance of a Russian deal to build a domestic nuclear energy sector: its top physicist – Fidel Castro's son, Fidel Castro Díaz-Balart – committed suicide, and the last time it tried to build a nuclear power plant, it failed spectacularly.

Castro Díaz-Balart was 68 when he committed suicide last year after months of being in what the government called a "deep depressive state." Havana has never elaborated on the circumstances of his death and has largely failed to replace his capacity as a nuclear energy leader on the island.

...As the head of Cuba's failed nuclear program, Díaz-Balart was in charge of the Juraguá Nuclear Power Plant in central Cuba, whose construction began in 1983. The collapse of the Soviet Union resulted in the cancelation of the project even as construction on one of the reactors was complete. Escaped workers on the plant offered testimony to the House of Representatives suggesting that "safety concerns such as poor construction practices ... could affect the safety of the reactors' operation."

González noted that, as recently as this February 2019 , the Communist Party newspaper *Granma* boasted about the regime's alleged efforts to make the "Nuclear City," the region around the doomed power plant, plentiful in food and agriculture. Cuba is currently facing extreme food and basic good

shortages, a product of decades of socialist mismanagement and the collapse of its colony, Venezuela.

Medvedev suggested extending economic ties to Cuba outside of the nuclear sector, though he did mention energy development as a sector in which both countries could cooperate while in Havana. A report by *The Guardian* this August 2019 revealed that Russia has been touring impoverished, unfree countries seeking nuclear deals, particularly in Africa. Rosatom has signed agreements with Sudan, Ethiopia, Republic of Congo, and Nigeria within two years – all nations with a history of unstable governments and insurgent movements. In the event of a government catastrophe in Nigeria, for example, the jihadist group Boko Haram could end up with access to nuclear materials.

These concerns do not take into account Russia's own lackluster safety record with nuclear material at home. In July 2019, for example, a nuclear-equipped Russian submarine suffered a major fire, killing 14 sailors. While Moscow insisted the fire never came close to triggering a nuclear disaster, one of the sailors speaking of the fallen at their official funeral thanked them for giving their lives to avoid a "planetary catastrophe," raising eyebrows.

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Source: https://www.breitbart.com/, 08 October 2019.

USA–BELARUS

US Offers to Supply Fuel For Controversial Belarus Nuclear Plant

US Assistant Secretary for Nuclear Energy Rita Baranwal has said that the Belarusian and Lithuanian governments should re-engage in a dialogue over the construction of a Russian-built nuclear power plant in Belarus close to the Lithuanian border, BelarusFeed has reported.

"The US is calling on Lithuania and Belarus to remain in touch and maintain transparency. I would say that VVER-type reactors similar to those installed at BelNPP operate safely in the world," Mrs Baranwal told the press, adding that "in the future, American fuel suppliers could partly supply fuel" which "is already being done at some power plants around the world."

Speaking in a meeting with US Energy Secretary Rick Perry, Lithuania's president, Gitanas Nauseda, called on the US to actively engage in resolving the issue of the Belarusian nuclear plant. "This power plant poses a danger of hybrid threats in the Baltic region, so it is essential that the US pay attention to security and preservation of democratic values in Europe," wrote BelarusFeed, quoting Mr Nauseda.

While the US energy secretary earlier stated that he did not want to get involved in the dispute, Žygimantas Vaièiunas, Lithuania's energy minister, said that his meeting with Mr Perry had reassured him of US support for Lithuania over nuclear safety issues. The Belarusian nuclear power plant is located in Astravets, near the Belarusian-Lithunian border, and has long been criticised by the Lithuanian government over environmental and nuclear safety issues.

Source: https://emerging-europe.com/, 09 October 2019.

NUCLEAR SECURITY

GENERAL

The IAEA International Conference on Nuclear Security 2020: A Preview

Next year's International Conference on Nuclear Security (ICONS) will be key to ongoing efforts to strengthen nuclear security globally, said participants in a panel discussion held on the sidelines of the recent IAEA General Conference. The 10-14 February 2020 ministerial-level conference follows earlier high-level conferences held in 2016 and 2013.

"ICONS 2020 is a step in a continuous cycle to maintain focus on nuclear security worldwide," IAEA Acting Director General Cornel Feruta said. "This conference is the most inclusive mechanism we have for all Member States to share their perspectives, challenges, and achievements; and for all of us to problem-solve together."

In a preview of the conference's review of nuclear security progress, representatives of Egypt and Panama highlighted the benefits of integrating nuclear security systems and measures in the early stages of projects such as research reactor development and public events that draw large crowds.

"With the Agency's assistance, Egypt installed security systems and physical protection upgrades at the country's two research reactors. We are looking forward to the successful conclusion of the Agency's second phase project, which will provide further support to Egypt in enhancing physical protection," said Ambassador Omar Amer Youssef, Egypt's Permanent Representative to the United Nations in Vienna.

A high-level policy discussion at ICONS 2020 will focus on international legally and non-legally binding instruments for nuclear security. At the General Conference side event, representatives of Bulgaria, Russia and the US encouraged universal adherence to the Convention on Physical Protection of Nuclear Material as amended, and of the ICSANT.

More than 640 papers from 85 Member States and 10 international organizations have been submitted for the conference. More than 320 students and young professionals have submitted entries in an essay competition. ICONS 2020 Co-President Luis Eduardo Pabon Chevalier, Charge d'Affaires of Panama in Vienna said the submissions formed a solid basis for a successful conference. "The high-level commitment will help translate the brilliant ideas that we have seen in the paper and essay submission into concrete actions for stronger nuclear security," he said at the side event.

The conference, to be held in Vienna, will include a ministerial segment, high-level policy discussions and parallel tracks of technical sessions. Its outcome, including an expected ministerial declaration will influence global efforts to strengthen nuclear security, including by informing the IAEA's Nuclear Security Plan for 2022 to 2025.

Source: https://www.iaea.org/, 02 October 2019.

IAEA–RUSSIA

IAEA, Rosatom Technical Academy to Cooperate to Strengthen Knowledge Management and Nuclear Security

The IAEA and Russia's Rosatom Technical Academy (Rosatom Tech) have agreed to work together to help Member States strengthen knowledge management and human resources development for nuclear energy and nuclear security. An agreement signed during the recent IAEA General Conference designates Rosatom Tech as an IAEA Collaborating Centre. The agreement, valid until 2023, formalizes and expands cooperation between Rosatom Tech and IAEA.

"Sustainable use of nuclear energy and other nuclear science and technology depends on expertise, knowledge, and skills being passed on to the incoming workforce as well as to countries that are considering introducing the use of nuclear power," said Deputy Director General Juan Carlos Lentijo, Head of the IAEA Department of Safety and Security. "This cooperation will enable the IAEA to better assist Member States as they strengthen their nuclear security and safety systems and measures."

Under the new agreement, the Rosatom Tech and IAEA will develop Russian language training materials based on the IAEA Nuclear Security Series and use these in a training courses for Russian-speaking participants. The material and courses will focus on good practices in knowledge sharing.

"The designation of the new Collaborating Centre that integrates efforts in the field of nuclear infrastructure and nuclear security, and the implementation of the planned actions until 2023 will provide a synergy effect in meeting growing needs of the IAEA Member States and will make available greater opportunities for the exchange of experience and best practices," said Yuri Seleznev, the rector of Rosatom Technical Academy.

By combining capacity building in knowledge management with training in physical protection and other nuclear security systems and measures, the training approach will help integrate security considerations into all aspects of the nuclear energy industry. The initiative will help ensure that specialists in knowledge management and human resource development are up to date on the latest developments in countries with nuclear new build programmes and activities," said Mikhail Chudakov, IAEA Deputy Director General and Head of the Department of Nuclear Energy. "It will also facilitate the opportunity for technical experts from Rosatom to support Knowledge Management Assist Visits and International Nuclear Management Academy education programmes."

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In June 2020, Rosatom Tech will host an IAEA Regional School on Nuclear Security for Russian-speaking participants. The Agency collaborates with the designated Member State institutions to promote the sustainable benefits of safe and secure peaceful application of nuclear science and technology. Rosatom Tech is one of the four Collaborating Centres in the field on Nuclear Security.

Source: https://www.iaea.org/, 10 October 2019.

NUCLEAR NON-PROLIFERATION

IRAN

Iran's Nuclear Program is Back to Pre-JCPOA Situation, Says Nuclear Chief

Iran's Atomic Energy Organization Chief Ali Akbar Salehi says Iran will soon introduce a set of 30 modern IR-6 centrifuges within the next 2 or 3 weeks as the latest development in its nuclear program. Salehi added that a new part of the heavy water reactor in Arak in central Iran will become operational within the next two weeks. This comes while Iran is bound by its 2015 nuclear deal with six world powers, also known as the JCPOA not to employ more than 30 of this model of centrifuge until 2023.

Salehi said in an interview with Iran's state TV on 08 October 2019 that Iran's nuclear program has "returned to pre-JCPOA situation" as it has increased the production of over 3.5 percent enriched uranium to 5 to 6 kilograms a day. Behrouz Kamalvandi, the spokesman for the Iranian Atomic Energy Organization had said in September 2019 that the IR-6 centrifuges is several times more powerful than the machines currently being used in Iran's nuclear program.

Kamalvandi said at the time that a series of 20 IR-4 and IR-6 have become operational and a series of 10 IR-5 centrifuges would be operational within two months as part of a R&D project. The US pulled out of the JCPOA in 2018 and has demanded a more comprehensive deal that would also limit Iran's ballistic missile program and its interventions in the region.

The IAEA announced in September 2019 that "Iran has installed or is installing 22 IR-4, one IR-5 and 30 IR-6 centrifuges." Iran has also threatened to take the 4th step in reducing its nuclear commitments by 06 November 2019.

Following the imposition of heavy sanctions by the US, Iran has been warning the European signatories of the JCPOA that it will reduce its commitment to the deal as long as Europe fails to help Tehran to sell oil in the international markets and repatriate its revenues. In three steps, Iran exceeded the 3.67% enrichment level and the 300 Kilogram stockpile of enriched Uranium allowed by the 2015 deal and employed modern centrifuges that will enable it to enriched more higher grade uranium.

The IAEA announced in September 2019 that "Iran has installed or is installing 22 IR-4, one IR-5 and 30 IR-6 centrifuges." Iran has also threatened to take the 4th step in reducing its nuclear commitments by 06 November 2019. Asked about what is going to happen in the 4th step, Salehi told reporters in Tehran that "it is too early to talk about this," adding that it "was not within

his powers" to decide on the matter, although he stressed "We are ready to implement any decision that might be taken in this regard."....Meanwhile, Iran's Supreme Leader Ali Khamenei said on October 2 that "Iran will continue to reduce its nuclear commitments with utmost seriousness."

French Foreign Minister Jean-Yves Le Drian has warned that the reduction of Tehran's nuclear commitments under the JCPOA "will increase tensions." Other French officials had warned earlier that further reduction in Iran's commitment might put an end to the JCPOA as European parties might leave the deal altogether. However, speaking at the Iranian Parliament on 06 October 2019, Iranian Foreign Minister Javad Zarif claimed that Europe is not in position to leave the JCPOA. Zarif said that Europe has failed to fulfil its commitments in the nuclear deal with Iran, adding that "Europeans are not in a position to withdraw from the 2005 deal."

Speaking at the Iranian Parliament on 06 October 2019, Iranian Foreign Minister Javad Zarif claimed that Europe is not in position to leave the JCPOA. Zarif said that Europe has failed to fulfil its commitments in the nuclear deal with Iran, adding that "Europeans are not in a position to withdraw from the 2005 deal.

Source: https://en.radiofarda.com/, 08 October 2019.

NUCLEAR PROLIFERATION

NORTH KOREA

China Calls for Dialogue after DPRK-US Nuclear Talks Broke Down

China once again calls for dialogue and political consultation, stressing that it is the only feasible solution to Korean Peninsula nuclear issues, after nuclear talks between the DPRK and the US broke down in Sweden.... Geng Shuang, spokesperson for Chinese Foreign Ministry made the remarks at a press conference...China hopes the DPRK and the US to maintain communication and stay committed to promoting denuclearization progress, said Geng, calling on the two sides to meet each other halfway.

Source: http://www.globaltimes.cn/, 09 October 2019.

N. Korea Able to Use Punggye-Ri Nuke Testing Site after Restoration Work: JCS

North Korea is believed to be able to reuse its now-defunct Punggye-ri nuclear test site after weeks or months of restoration work, though no such moves have been detected, South Korea's Joint Chiefs of Staff (JCS).... In May 2018, the communist country demolished the testing site, which included four tunnels, in a show of its commitment to denuclearization. "Two of the four tunnels — the No. 3 and No. 4 ones — could be able to be used again after repair," Joint Chiefs of Staff Chairman Gen. Park Han-ki told lawmakers during a parliamentary audit, noting that "at least weeks or months will be necessary for their restoration."

A senior-level JCS officer then added that no moves for restoration have been detected. Declaring the breakdown of its working-level talks with the US held in Sweden, the North's top nuclear negotiator Kim Myong-gil said, "Whether our suspension of the nuclear and ICBM tests will continue or they will be revived will depend wholly on the US stance."

The North Portal, also known as Tunnel No. 2, of North Korea's only known nuclear test site, Punggye-ri, is blown up on May 24, 2018, in this press pool photo. South Korean journalists covering the process said the demolition of the site was carried out in a series of explosions over several hours on the day....

Asked about North Korea's recently tested SLBM, the Pukguksong-3, the chairman said that the weapon does not seem to be at the stage of operational deployment. Park also said the military is closely monitoring the situation for any additional launches and vowed to beef up the military's interception capabilities to counter such threats. The military has conducted test-firing of some of its Hyunmoo missiles this year and plans to routinely conduct live drills, a senior military officer said during the audit.

The military had halted firing of its missiles after 2013, but resumed the tests in 2017 following a series of North Korean missile launches that year, including the test-firing of ICBMs. The chairman also said the North's SLBM is believed to be a two-stage, solid-fuel missile with extended flight

range. Earlier media reports said that the missile appears to be made of three stages.

North Korea did not provide details, but experts have said that the latest version of its Pukguksong missile is presumed to have a flight range of 2,000 km or longer. The Pukguksong-1 SLBM and the Pukguksong-2 ground-based missile have flight ranges of around 1,300 km.

Pointing to potential threats from North Korea's EMP bombs, the JCS also vowed to accelerate the establishment of protection facilities. ...The North has long been believed to be developing EMP weapons. "(The JCS) designated 55 locations as command facilities in response to EMP threats, and 18 places completed securing such capabilities or have been going through a related process," the JCS said, adding that it will push to bring forward the date of its full completion from 2051 to 2039.

There is a limit to the patience of the DPRK, and there is no guarantee that all our patience would continue indefinitely. The North Korean spokesperson accused the US of pressuring European countries to support a statement warning Pyongyang against its missile tests and urging North Korea to make efforts to build trust with officials in Washington.

Source: https://en.yna.co.kr/view/, 08 October 2019.

North Korea is Threatening New Nuclear Weapons Tests

North Korea is once again eyeing nuclear weapons development, as denuclearization talks with the US appear to have reached an impasse. In its latest threatening remarks following a reported SLBM test, North Korean officials called a European rebuke of their missile tests a "serious provocation," according to the South Korean Yonhap News Agency.

"There is a limit to the patience of the DPRK, and there is no guarantee that all our patience would continue indefinitely," a spokesperson for the North Korean foreign ministry said in a statement published by the state-run Korean Central News Agency. The North Korean spokesperson accused the US of pressuring European countries to support a statement warning Pyongyang against its missile tests and urging North Korea to make efforts to build trust with officials in Washington.

The recent SLBM test raises the threat of North Korea's ability to strike the US and its allies. A submarine-borne ballistic missile could extend North Korea's nuclear strike range, by carrying such a ballistic missile much closer to the US mainland. ...The North Korean side left the peace talks on Saturday, amid claims that negotiations had "broke down." North Korea's top negotiator Kim Miyong Gil said the US had not met North Korea's expectations for talks and has not "discarded its old stance" towards denuclearization of the Korean peninsula.

Despite the claims of North Korean negotiators, US officials signaled optimism on Saturday, vowing to return to Sweden for an additional round of talks in the next two weeks. North Korea has not yet appeared to accept the invitation to return to talks in Sweden. Kim also reportedly said Pyongyang's moratorium on nuclear and ICBM tests are now dependent Washington.

In North Korea's latest statements, the ministry spokesperson said the DPRK is considering leaving negotiations altogether, and accused the US of coming to denuclearization talks with an "empty hand." "The UNSC...picks fault with the just measure belonging to our right to self-defense, while keeping mum about the test-fire of Minuteman 3 ICBM recently conducted by the U.S," the North Korean criticism continued, appearing to reference a recent US ballistic missile test in the South Pacific.

Source: https://americanmilitarynews.com/, 10 October 2019.

NUCLEAR SAFETY

FRANCE

IAEA Safety Mission Sees Significant Progress at France's Bugey Nuclear Power Plant

An IAEA team of experts said the operator of France's Bugey Nuclear Power Plant had strengthened operational safety by addressing the findings of an IAEA review in 2017. The team also encouraged the operator to continuously improve

safety performance. The Operational Safety Review Team (OSART) concluded the five-day follow-up mission to Bugey NPP on 04 October 2019. The plant, which is located approximately 30 kilometres east of Lyon in France, is operated by Électricité de France S.A. (EDF). It consists of four 900 megawatt pressurized water reactor units in operation. The units were connected to the grid between 1978 and 1979.

..."The team was pleased to observe the positive results of the efforts and actions that have been taken in the plant to address the findings of the 2017 mission. The plant management team and staff have demonstrated a strong commitment to safety," said team leader Fuming Jiang, a Senior Nuclear Safety Officer at the IAEA. "We saw clear improvements in important areas, such as fire safety, human performance, work quality and industrial safety. The OSART team encourages the plant to complete the remaining improvement actions as planned and to build on this momentum to further improve its safety performance."

The team noted that while significant progress has been made, further efforts are required to fully implement some action plans drawn up after the 2017 mission, including: The plant should further improve the quality of its maintenance activities. The plant should continue reducing the number of temporary modifications in the plant. The plant should further improve the effectiveness review of corrective actions developed to prevent recurrence of events.

The five-member team comprised experts from Slovakia and Sweden as well as three IAEA officials. The team observed that several findings from the 2017 review were fully addressed, including: The plant has improved its preparedness for evacuation of personnel in the case of an event. The plant has enhanced its practice in the handling and use of hazardous chemical substances.

The plant improved its application of the chemistry quality control programme. The team noted that while significant progress has been made, further efforts are required to fully implement some action plans drawn up after the 2017 mission, including: The plant should further improve the quality of its maintenance activities. The plant should continue reducing the number of temporary modifications in the plant. The plant should further improve the effectiveness review of corrective actions developed to prevent recurrence of events. ...

The team provided a draft report of the mission to the plant management on the final day. The plant management and the French Nuclear Safety Authority (Autorité de sûreté nucléaire – ASN), which is responsible for nuclear safety oversight in France, will have the opportunity to make factual comments on the draft. These will be reviewed by the IAEA and the final report will be submitted to the Government of France within three months.

Source: https://www.iaea.org/, 07 October 2019.

NUCLEAR WASTE MANAGEMENT

GERMANY

IAEA Mission Says Germany Committed to Safe, Responsible Waste Management, Sees Areas for Further Enhancement

An IAEA team of experts said Germany is continuing to manage its radioactive waste and spent fuel in a safe and responsible manner. The team also noted opportunities for improving the monitoring of the implementation of the national programme for radioactive waste and spent fuel management (the National Programme) and for achieving transparency in some reporting and regulatory processes.

The Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) team concluded a two-week mission to Germany on 4 October. The team comprised eight experts from Finland, France, Italy, Luxemburg, Sweden, the UK and the USA and four IAEA staff members.

The mission was requested by the Government of Germany. The main German counterpart organization was the Bundesministerium für Umwelt, Naturschutz und Nukleare Sicherheit, BMU (the Federal Ministry for the Environment,

Nature Conservation and Nuclear Safety). The team visited and interacted with representatives from a wide range of federal and regional authorities and other organizations.

ARTEMIS missions provide independent expert advice from an international team of specialists convened by the IAEA. Reviews are based on IAEA safety standards and technical guidance as well as on international good practices. Germany plans to use the mission to fulfil its obligations under a European Council directive that requires EU member states to invite international peer reviews of their national programmes for the management of radioactive waste and spent fuel. A staff member from the European Commission attended the mission as an observer.

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Germany has decided to stop generating electricity from commercial nuclear power plants by 2022. The country has over 30 nuclear power plants and other nuclear facilities, whose decommissioning will create a significant amount of radioactive waste. Germany is also making plans to retrieve radioactive waste from the Asse II former salt mine. The waste will need to be stored until it can be safely disposed.

Currently, Germany does not have an operating radioactive waste disposal facility. The Morsleben disposal facility has stopped receiving waste and is being closed. A new disposal facility for low and intermediate level waste is being constructed at the site of a former iron ore mine at Konrad. A nationwide search has begun to find a site for a disposal facility that could receive various types of radioactive waste, including high level waste (HLW).

The ARTEMIS team said Germany has a mature legal and regulatory framework for the safety of spent fuel and radioactive waste management. The team highlighted the professionalism and commitment to safety of all organizations involved in the implementation and oversight of the National Programme. The ARTEMIS team identified the involvement in the site selection process of an independent mediating body comprised of prominent people and other citizens (Nationales Begleitgremium) as a good practice.

"Germany has an important programme of radioactive waste management and decommissioning. Many lessons have been learnt that will help the international community," said ARTEMIS team leader Patrick Majerus, head of Luxembourg's Department of Radiation Protection at the Ministry of Health.

However, the team noted that the planned completion by 2031 of the site selection process for the disposal facility that could receive HLW represents a significant challenge. Germany plans to site, license, construct and begin to operate this facility by around 2050. The retrieval of radioactive waste from the Asse II mine is another significant challenge, the team said. The team provided recommendations and suggestions for further enhancements, including: The Government should establish an improved process for monitoring progress in implementing the National Programme.

Germany has pledged to conduct its work towards radioactive waste disposal in a self-questioning manner and with a mindset of continuous learning. Therefore, we highly appreciate the input and constructive dialogue during the ARTEMIS mission. Their recommendations and suggestions help us to maintain a high level of safety.

The Federal Company for Radioactive Waste Disposal (BGE), in consultation with the Federal Office for the Safety of Nuclear Waste Management (BfE), should consider making public the approach to applying site selection criteria in the search for a site for a disposal facility that could receive HLW.

The BMU should update the cost assessment for the entire National Programme and include the costs for waste retrieval from the Asse II mine. "Germany has pledged to conduct its work towards radioactive waste disposal in a self-questioning manner and with a mindset of continuous learning.

Therefore, we highly appreciate the input and constructive dialogue during the ARTEMIS mission. Their recommendations and suggestions help us to maintain a high level of safety." said Philip Borck, Head of Project Management Department, BGE.

... The final mission report will be provided to the Government in about two months. ARTEMIS is an integrated expert review service for radioactive waste and spent fuel management, decommissioning and remediation programmes. This service is intended for facility operators and organizations responsible for radioactive waste management, as well as for regulators, national policy makers and other decision makers.

Source: https://www.iaea.org/, 09 October 2019.

UK

Radioactive Waste Management in the Spotlight

The NDA joined forces with the Nuclear Institute for one of the most anticipated events in the industry's calendar. The Integrated Waste Management Conference 2019 welcomed industry leaders and experts from across the globe at the largest event of its kind in Europe.

More than 250 delegates attended the two-day gathering – held in Penrith, Cumbria, earlier – to learn more about progress and opportunities from integrated waste management with talks, workshops, exhibitions and panel sessions. A packed programme of speakers included government officials, regulators, supply chain companies, consultants and waste management experts from across the NDA group.

The NDA's Director of Integrated Waste Management, Corhyn Parr, said: This was a rare and valuable opportunity to share learning, discuss issues and progress and to debate the opportunities around integrated waste management. Having leading experts from industry and academia together in one place is an important aspect in driving forward the topic of radioactive waste - which is a vital part of the NDA's mission.

Earlier this year 2019, the NDA launched its Radioactive Waste Strategy which outlines its commitment to ensuring that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provide value for money.

Source: https://www.gov.uk/, 10 October 2019.

Centre for Air Power Studies

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

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