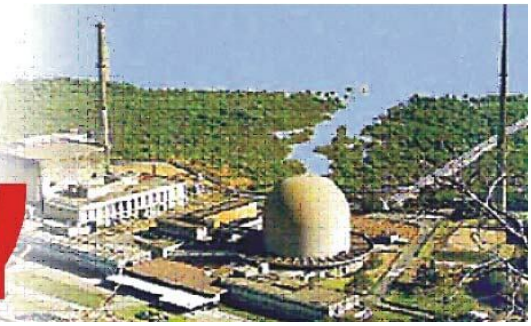
NUCLEAR SECURITY



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

Vol 09, No. 18, 15 JULY 2015

JOINT STATEMENT

IAEA Director General Yukiya Amano and the Vice-President of Iran Ali Akbar Salehi

... The IAEA and the Islamic Republic of Iran agree, in continuation of their cooperation under the Framework for Cooperation, to accelerate and strengthen their cooperation and dialogue aimed at the resolution, by the end of 2015, of all past and present outstanding issues that have not already been resolved by the IAEA and Iran.

In this context, Iran and the Agency agreed on the following:

1. The IAEA and Iran agreed on a separate arrangement that would allow them to address the remaining outstanding issues, as set out in the annex of the 2011 Director's General report (GOV/2011/65). Activities undertaken and the outcomes achieved to date by Iran and the IAEA regarding some of the issues will be reflected in the process.

2. Iran will provide, by 15 August 2015, its explanations in writing and related documents to the IAEA, on issues contained in the separate arrangement mentioned in paragraph 1.

Iran will provide, by 15 August 2015, its explanations in writing and related documents to the IAEA, on issues contained in the separate arrangement mentioned in paragraph 1. After receiving Iran's written explanations and related documents, the IAEA will review this information by 15 September 2015, and will submit to Iran questions on any possible ambiguities regarding such information.

3. After receiving Iran's written explanations and related documents, the IAEA will review this information by 15 September 2015, and will submit to Iran questions on any possible ambiguities regarding such information.

4. After the IAEA has submitted to Iran questions on any possible ambiguities regarding such information, technical-expert meetings, technical measures, as agreed in a separate arrangement, and discussions will be organized in Tehran to remove such ambiguities.

5. Iran and the IAEA agreed on another separate arrangement regarding the issue of Parchin.

6. All activities, as set out above, will be

CONTENTS

completed by 15 October 2015, aimed at resolving all past and present outstanding issues, as set out in the annex of the 2011 Director General's report (GOV/2011/65).

7. The Director General will provide regular updates to the Board of Governors on the implementation of this Road-map.

8. By 15 December 2015, the Director General will provide, for action by the Board of Governors, the final assessment on the resolution of all past and present outstanding issues, as set out in the annex of the 2011 Director General's report (GOV/2011/65). A wrap up technical meeting between Iran and the Agency will be organized before the issuance of the report.

9. Iran stated that it will present, in writing, its comprehensive assessment to the IAEA on the report by the Director General.

10. In accordance with the Framework for Cooperation, the Agency will continue to take into account Iran's security concerns.

Source: https://www.iaea.org/, 14 July 2015.

OPINION – Lawrence Wilkerson, Kate Gould

In Iran Deal, a Vote for Diplomacy

The Iran deal reached in Vienna is a historic victory. Exquisite diplomacy has delivered Washington and Tehran from years of teetering on the brink of war to one of the greatest diplomatic achievements of the nuclear age. This deal seals off Tehran's potential pathways to a nuclear weapon and subjects Iran to a robust transparency and inspection regime.

Now, every member of Congress will have the opportunity to stand on the right side of history and support this deal. This September, both chambers of Congress are expected to vote on whether this agreement will go forward. Lawmakers have the responsibility to ensure that this landmark diplomatic achievement is protected from the hardliners in the US, Iran and elsewhere who are working to sabotage this agreement before the ink has dried.

Now, every member of Congress will have the opportunity to stand on the right side of history and support this deal. This September, both chambers of Congress are expected to vote on whether this agreement will go forward. Lawmakers have the responsibility to ensure that this landmark diplomatic achievement is protected from the hardliners in the US, Iran and elsewhere who are working to sabotage this agreement before the ink has dried.

This vote may be the single biggest vote on war and peace of the decade. As forty national peace and security and faith-based organizations supporting the deal have warned lawmakers, "this will be among the most consequential national security votes taken by Congress since the decision to authorize the invasion of Iraq."

The reason this vote is happening at all is because policymakers set up an extra-constitutional process in which Congress would vote on this agreement through passage of the Iran Nuclear Agreement Review Act of 2015 (INARA). INARA lays out a process in which both the House and the Senate would vote on a 'resolution of disapproval.' If the resolution of disapproval were to be signed into law, the President would be barred from suspending statutory sanctions, as required under the deal.

Such an outcome would only invite disaster. If the U.S. doesn't make good on its end of the bargain, there is little reason to believe Iran would make good on its nuclear concessions. Even our allies would question the purpose of negotiating with Washington when Capitol Hill sabotages a multilateral agreement of this significance. For the U.S. to renege on its obligations would risk an unconstrained Iranian nuclear program and an escalating cycle of hostilities that would put our countries back on a path to confrontation or possibly even war.

That is why President Obama is expected to veto such a dangerous measure, should Congress dare to take us to the edge of this diplomatic cliff. To

override the President's veto would take a whopping two-thirds of lawmakers in each chamber voting to reject diplomacy, and risk a path of confrontation and possibly war.

However, our elected officials can take the high road and vote for the national interest of America. In fact, we don't have to risk going to the brink at all if 41 senators block a resolution of disapproval from getting a vote. If 41 senators simply vote against what's known as "cloture," which would allow this legislation to go forward, then the American people will have won.

And even if a majority of the House of Representatives vote to disapprove this deal going forward, without the Senate's vote going forward, this reckless disapproval legislation won't make it to the president's desk.

While opponents of diplomacy are always thinking of new shenanigans to sabotage a deal, they know that the vote on the deal will define the Iran debate for years to come. That's why opponents of a deal are pouring millions into attack ads going after key senators in advance of this landmark vote. If the Senate fails the nation in this initial cloture vote, then the threat of both houses of Congress voting to reject the deal looms large. In that scenario, the fate of this watershed agreement will be determined by whether 34 senators and 146 representatives take a stand for diplomacy and the real interests of the nation, preventing an override of the President's veto.

If the Senate fails the nation in this initial cloture vote, then the threat of both houses of Congress voting to reject the deal looms large. In that scenario, the fate of this watershed agreement will be determined by whether 34 senators and 146 representatives take a stand for diplomacy and the real interests of the nation, preventing an override of the President's veto.

A clear majority of Americans want members of Congress to choose diplomacy. We suspect strongly that a supermajority — over 75% — would support the deal if they knew the truth and had not been led astray by billions of dollars spent in creating subterfuge, half-truths and outright lies. The overwhelming consensus among national security and non-proliferation experts is that this deal makes the U.S. and the world a safer place. Voting for the deal means not only ensuring one of the greatest diplomatic achievements of our time, but finally beginning to cease the endless cycle of U.S. military misadventures in Southwest Asia.

Source: Wilkerson previously served as chief of staff to U.S. Secretary of State Colin Powell and Gould is the legislative associate for Middle East policy at the Friends Committee on National Legislation. http://www.usatoday.com, 14 July 2015.

OPINION – Ilan Goldenberg

Beyond the Iran Deal: A Better Non-Proliferation Regime

As we wait with baited breath for the outcome of talks in the Vienna, it is worth considering the broader nuclear nonproliferation implications of an Iran Deal. If the P5+1 and Iran are able to come to a final agreement on a nuclear accord that deters Iran from developing nuclear weapons in the future, this moment could represent a seminal achievement in the history of nuclear non-proliferation negotiations. The agreement has the potential to prevent the possibility of nuclear proliferation in the Middle East while also setting positive precedents that can be applied globally.

To take full advantage of this opportunity and ensure it becomes a net positive for the broader non-proliferation agenda, the US and its partners will have to move out simultaneously with both a global and regional non-proliferation plan. The international campaign prior to the agreement could become a new model for how to effectively deal with violators. There is a long history of cases in which states have given up the pursuit of a nuclear weapons program because of external changes to their security environment, internal

regime changes, a shift in strategy, military coercion, or simply because the task was too difficult and costly. Iran would be a unique instance because of the scale and scope of the international response the complexity of the negotiations, and the fact that Iran's regime had not fundamentally changed but was persuaded to change its behavior through a combination of economic pressure, international isolation, military threat and diplomatic engagement. Tehran agreed to negotiate over its nuclear program, to roll-back some of its achievements and to accept strict constraints over its nuclear program.

Iran would be a unique instance because of the scale and scope of the international response the complexity of the negotiations, and the fact that Iran's regime had not fundamentally changed but was persuaded to change its behavior through a combination of economic pressure, international isolation, military threat and diplomatic engagement.

The international process will have worked precisely as intended, with initial concerns being referred by the IAEA Board of Governors to the UN Security Council, which imposed sanctions but left the door open for negotiations. These sanctions were crafted to ensure maximum leverage on Iran while also maintaining broad international support, and eventually led to a cheater making significant concessions. The limitations that Iran will have agreed to on its nuclear program could become a model for future violators attempting to rebuild confidence from the international community if they change course.

Beyond addressing violators, the agreement could also set new norms that apply universally to all nuclear states. The US should take the most positive elements of the agreement with Iran and turn them into global best practices. Renegotiating the NPT is impossible, but there are certainly precedents where improvements have been made to the regime.

Beyond addressing violators, the agreement could also set new norms that apply universally to all nuclear states. The US should take the most positive elements of the agreement with Iran and turn them into global best practices. Renegotiating the NPT is impossible, but there are certainly precedents where improvements have been made to the regime. In 1997 for example, the IAEA instituted the voluntary Additional Protocol to better constrain states from illicitly producing nuclear weapons.

The most relevant elements of the Iran agreement are likely to be the transparency and inspections mechanisms. Iran has agreed to provide continuous surveillance (for example, 24-hour video access) to uranium mines for the next 25 years and to centrifuge production facilities for the next 20 years. Complete access—early on in the production chain—to some of the key components needed to develop a nuclear weapon would make a convert "sneak" to a bomb much more difficult. Getting other states to agree to this new standard would improve monitoring around the world, making it more difficult for potential cheaters. It would also make it easier for Iran to continue to comply with intrusive inspections if it did not feel that it was being singled out.

And it might ensure that even after Iran's commitments expired, it would continue to implement them if they were considered global best practices. One area where the agreement could set some risky precedents is in the area of peaceful nuclear energy collaboration. The US is expected to agree to collaborate with Iran on peaceful nuclear activities, though Tehran will maintain some domestic enrichment capabilities despite having no real credible civilian energy needs that require that capability. This could cause other states to ask for the same and weaken the overall non-proliferation regime.

To mitigate against this consequence, the US and the international community must recommit themselves to global standards for civilian nuclear

cooperation that ask countries that seeks nuclear energy cooperation to pledge not to enrich uranium or reprocess plutonium — necessary capabilities for a military nuclear program. This standard was applied in 2009 when the US signed the 123 Agreement for Peaceful Civilian Nuclear Energy Cooperation with the UAE. The agreement will allow the UAE to build out an economically viable civilian nuclear energy program worth billions of dollars that will address a significant portion of the UAE's domestic energy. However, it will do so without allowing for any domestic enrichment. There is also a danger that other states in the region, particularly Saudi Arabia, could respond to the agreement by seeking a domestic capability similar to Iran's.

To cope with the threat, the US should provide credible commitments to its allies that they will not stand alone against any Iranian threat. These assurances should address the Sunni Arab concerns about Iran's nuclear and conventional aspirations. They should aim to project American power in the region and to signal that the US is there to stay by maintaining the current robust conventional American force presence.

The US should also increase intelligence cooperation and provide more training and military support to US allies to counter Iranian proxies. US nuclear assurances are much more difficult. It is hard to see a US administration and certainly not Congress providing a nuclear umbrella through a full treaty commitment to Gulf partners. And it is not even clear if many of the Gulf States want that type of commitment. The US should initiate an intimate discussion with its allies about their nuclear concerns and how can they together cope with a nuclear threat in the Gulf. And if it becomes clear that some states are indeed eager to obtain a nuclear umbrella some commitments may be possible through executive agreement.

Along with the incentives and reassurance, Washington should stress the sticks available if its regional partners attempt to proliferate, as Iran did. It is not easy to build a nuclear weapon. It took Iran years to build up its nuclear program, despite its large and well-educated population. Iran has also paid a tremendous price including billions of dollars in investment, onerous sanctions, and isolation from the international community. The Iran example should be able to demonstrate to American partners that it is simply not worth pursuing this track. Overall, a nuclear agreement that prevents Iran from acquiring nuclear military capabilities represents opportunities for transformational changes both in the region and in the global non - proliferation arena. However, a positive outcome will require the US to pursue the right combination of policies after a deal including reassuring partners, pushing back against Iranian surrogates and proxies, and leveraging the agreement in the broader non-proliferation arena.

The Iran example should be able to demonstrate to American partners that it is simply not worth pursuing this track. Overall, a nuclear agreement that prevents Iran from acquiring nuclear military capabilities represents opportunities for transformational changes both in the region and in the global non-proliferation arena.

Source: http://www.nationalinterest.org/,07 July, 2015.

OPINION – The Conversation

Why the Military is Divided Over Britain's Nuclear Deterrent

Britain's nuclear deterrent is attached to four Vanguard-class submarines. One thing was very striking at the recent RUSI Land Warfare Conference, where current British Army personnel including top brass and Ministry of Defence officials were heavily present. The issue of replacing Trident, the UK's sea-based nuclear deterrent, was not discussed at all. This conference was taking place a few months ahead of Conservative plans to renew the deterrent like for like. This was guaranteed by the party's victory at the general election in May, and has since been reaffirmed by Michael Fallon, the defence secretary. Yet when it comes to Trident, the British military are "split on this issue as never before".

That was the conclusion of a report by the Nuclear Education Trust and Nuclear Information Service that was published at the end of June. So, why the difference in views?

The Need for UK nuclear Weapons*:* Admittedly the report tends to emphasise the minority views in the data, coming from one organisation whose fundamental goal is to "make nuclear issues accessible to all regardless of age and ability" (Nuclear Education Trust) and another that is dedicated to disarmament (Nuclear Information Service). It also represents a mere snapshot of the views of mainly ex-military personnel based on 35 in-depth interviews. That said, it undoubtedly offers an insight into the variety of views on Trident that exist within UK defence circles. It will be no surprise that most interviewees favoured UK nuclear weapons and replacing Trident. And those who demonstrated concerns were not opposed per se, but raised issues of costs and effectiveness.

The majority of military personnel interviewed had "little interest in Trident" at all. The report noted that army personnel are the "least supportive" as they have the "least to gain" in contrast to the Royal Navy, which feels Trident justifies its claim as the senior service responsible for the strategic defence of the United Kingdom.

What was interesting, and may shed light on the silence at the RUSI conference, is that the majority of military personnel interviewed had "little interest in Trident" at all. The report noted that army personnel are the "least supportive" as they have the "least to gain" in contrast to the Royal Navy, which feels Trident justifies its claim as the senior service responsible for the strategic defence of the United Kingdom. These grievances (some may call it tribalism) should presumably be understood in terms of materials and priorities as the cost of Trident limits investment in the conventional capabilities of the army and RAF. No single weapons system can protect against all threats, of course.

Even with the continuous at-sea deterrent provided by Trident, the UK would still remain vulnerable to threats below the nuclear threshold such as climate change, cyber war and nuclear terrorism.

Even with the continuous at-sea deterrent provided by Trident, the UK would still remain vulnerable to threats below the nuclear threshold such as climate change, cyber war and nuclear terrorism. Yet there may be greater threats above the nuclear threshold if the UK were to unilaterally reduce its nuclear capability. Russia's recent nuclear sabre-rattling is a case in point. Deterrence can fail, of course. It is also ill-suited to many of today's security threats, and accidents can happen – as one whistle blower recently augured. Yet most realists will still tell you that the very destructiveness of nuclear weapons helps to decrease the probability for war between great powers.

Costs and Strategy: A related issue is the balance of costs between nuclear and conventional defences. Although most interviewees in the report favoured "high-priority" government spending on the nuclear deterrent, they didn't want this to undermine conventional capabilities and said the cost of replacing Trident should fall outside the Ministry of Defence budget. Yet this logic assumes that savings from either abandoning nuclear weapons or reducing our current deterrent would be reinvested in conventional forces. There is no guarantee of this. The report demonstrated an increasingly common argument: Trident is useless as a military tool and frivolously wastes billions on a symbol of strength. The fact that it is arguably more of a political tool used to be reflected in the fact that the Treasury met the cost of the deterrent.

In 2010, however, it was moved over to the defence budget. It is estimated that the cost of replacing the four Trident-equipped Vanguard-class submarines will consume 10%-12% of the defence budget during the procurement stage but will be reduced to 5%-6% once the next generation of submarines comes online in the late 2030s. According to the ministry, it will cost £17.5bn to £23.4bn at 2013-2014 prices to procure the replacement system. (Though it has been claimed by the likes of the Scottish Nationalists that the total costs of procurement and the running costs of the replacement deterrent "over its lifetime" will reach £100bn.)

Later this year, the government will conduct its strategic defence and security review. We are told it will be a full-scale review of all the threats and the capabilities facing the UK. But given the commitment to like-for-like replacement that I mentioned earlier, it is unlikely that this review will see Trident as no longer key to Britain's security. This is at a time when the UK's defence budget is facing another 5% or £1bn cut. Couple that with the sizeable cost of Trident renewal and it can only have an effect on the UK's conventional forces. As one young army officer so eloquently put it at the RUSI conference, we may have the manpower and the equipment but will we have the money left to do anything with them? A pan-military conference might feel understandably awkward about airing its divisions in public, but the rest of us must not. How much faith we put in nuclear weapons as a traditional deterrent in an age of fluctuating threats is a public debate that needs to take place.

Source: http: //theconversation.com/, 06 July 2015.

OPINION – Henry Sokolski

Deploying US Nuclear Weapons Won't Strengthen Korea-US Ties

Redeploying US tactical nuclear weapons to South Korea "is not the way to strengthen" the security alliance between the two countries, a leading American nonproliferation expert said on 4 July, 2015. Henry Sokolski, executive director of the Nonproliferation Policy Education Center, emphatically made the point in a statement to Yonhap News Agency, stressing that earlier media reports misquoted him as calling for such a deployment.

Sokolski, who served as a nonproliferation official at the Pentagon when the US withdrew nuclear weapons from Korea in the early 1990s, explained at a Heritage Foundation event that South Koreans may want tactical nuclear weapons back on their soil, but the US can and should meet what's driving the desire without redeploying such weapons. "The US once deployed such warheads in Korea to demonstrate America's willingness to use nuclear arms to defend South Korea if necessary. Koreans naturally want US and South Korean security ties to remain as tight as they were when the US deployed these warheads in Korea," he said in the statement.

South Koreans may want tactical nuclear weapons back on their soil, but the US can and should meet what's driving the desire without redeploying such weapons. "The US once deployed such warheads in Korea to demonstrate America's willingness to use nuclear arms to defend South Korea if necessary.

With advances in military science since l990, however, there now are "much safer ways to maintain America's nuclear guarantee without employing actual warheads on Korean soil," Sokolski stressed. "That's why I argued and believe that despite a recent Center for Strategic and International Studies report that recommends again deploying US nuclear warheads in Korea, doing this is not the way to strengthen US-ROK security ties," he said. He was referring to a CSIS report and proposed the US place tactical nuclear weapons back in South Korea to better cope with the ever-growing nuclear capabilities of the communist North. Some hard-line conservatives have called for such a deployment whenever North Korea has made provocative acts, such as nuclear and missile tests. But officials of the US and South Korea have flatly rejected such calls. Sokolski also said that he recently made a visit to Seoul, and Korean officials he spoke with "never said that they want to acquire tactical nuclear weapons."

Source: http://www.koreaherald.com/. 05 July 2015.

OPINION – Mike Cohen

SA's Proposed $100bn Nuclear Fleet – Driven By Arrogance or Ignorance?

Politically-driven decisions are not always driven by expediency. Sometimes they reflect arrogance, ignorance or simply a lack of vision. South Africa is persisting with a planned nuclear fleet to produce the same output as Eskom's two inflated coal fire plants, but at five times the cost. Anyone who understands how Moore's Law is transforming the cost of energy and its storage would instantly agree with Singularity University's Peter Diamand is that investing in nuclear is a

really bad idea. And it's not like those making the decisions haven't been exposed to the reality of the power equation. Since the first bidding process in August 2011, each of four successive rounds in the Government's own Renewable Power procurement programme has seen prices fall – to a level that's already competitive with that which Eskom sells into the grid. So why bet $100bn the country simply doesn't have on an expensive, fixed cost alternative whose first power only hits the grid in eight years – at which time who knows how cheap renewable power might be? No wonder voters are suspicious.

Russia is seen as the frontrunner to win the right to build South African nuclear power plants that may be worth as much as $100 billion. With a six-month deadline to award contracts, who's going to pay for the country's biggest project yet remains a mystery. Price-tag estimates for as many as eight reactors generating 9,600 megawatts, which the government wants to begin operating from 2023 and complete by 2029, range from $37 billion to $100 billion. Bids are due to start this quarter, with Russia's Rosatom Corp. seen as a leader.

Russia is seen as the frontrunner to win the right to build South African nuclear power plants that may be worth as much as $100 billion. With a six-month deadline to award contracts, who's going to pay for the country's biggest project yet remains a mystery. Price-tag estimates for as many as eight reactors generating 9,600 megawatts, which the government wants to begin operating from 2023 and complete by 2029, range from $37 billion to $100 billion.

Areva SA, EDF SA, Toshiba Corp.'s Westinghouse Electric Corp., China Guangdong Nuclear Power Holding Corp. and Korea Electric Power Corp. have also shown interest. The planned investment comes as the government battles to fend off a junk-grade credit rating and the National Treasury seeks to rein in the budget deficit. Proceeding with the nuclear plants could result in a large increase in public debt, the IMF warned in a June 24 report. "There appears to be a simple-minded assumption that countries like China or Russia will provide cheap plants and offer finance," Steve Thomas, professor of energy policy at the University of Greenwich in the U.K., who has monitored South Africa's nuclear plans since 1997, said in a June 24 phone interview. "That's an illusion."

Rosatom Head-start: Rosatom may have a head-start in the bidding because of the close historical ties between South Africa's ruling African National Congress and Russia, according to analysts including IHS Country Risk's Robert Besseling and Teneo Intelligence's Anne Fruhauf. President Jacob Zuma has met his Russian counterpart Vladimir Putin several times over the past year and the two nations have signed a nuclear cooperation accord.

The agreement provides a "proper and solid platform for future extensive collaboration," South African Energy Minister Tina Joemat-Pettersson said in a statement in September. South Africa has concluded similar pacts with China, France, the US, Japan and South Korea. Rosatom has agreed to fund construction of plants elsewhere. In 2013, Hungarian President Viktor Orban agreed a 12 billion-euro ($13.3 billion) expansion to a nuclear power plant with Rosatom, funded with a 10 billion-euro loan from Russia, payable over 30 years at below-market rates. Hungary's parliament classified the deal for three decades.

Sole Plant: ... State power utility Eskom Holdings SOC Ltd. operates South Africa's sole nuclear plant, the 1,800-megawatt Koeberg facility near Cape Town, which has been in operation since 1984. Five years ago, the government shelved plans to build additional conventional atomic stations because they were too expensive and difficult to finance. The government has revived its nuclear expansion plans as it seeks to address energy shortages that are already causing blackouts and to reduce its reliance on coal, which Eskom uses to generate about 80 percent of the nation's electricity. The new reactors could cost as much as $100 billion over 15 years, according to Des Muller, head of Johannesburg-based building company Group Five

Ltd.'s nuclear construction division. That's more than five times what Eskom is spending on two coal-fired plants that will generate a similar amount of power.

Not Needed: A study published in 2013 by the University of Cape Town's Energy Research Centre found nuclear plants weren't needed and wouldn't be cost-effective for 15 to 25 years, based on a projected cost of $7,000 per kilowatt installed. The Department of Energy's 2013 master-plan — which the government rejected — suggested deferring a decision on whether to build atomic power facilities until at least 2025, and scrapping the option if the cost exceeded $6,500 per kilowatt of capacity. Thomas estimates current costs at about $8,000 per kilowatt installed. The nuclear program will benefit the country for the next 80 years and promote industrialization, said Zizamele Mbambo, a deputy director-general at the Department of Energy. "The return on investment will far exceed the investment," he told reporters in Cape Town on June 2. While the new plants will go ahead, the cost and funding arrangements still have to be worked out, according to the energy minister.

Affordability Test: "The true test of affordability for nuclear power will be in the price and financial offering provided by technology suppliers," she said in a written reply to a parliamentary question on June 11. "It is crucial to start the actual nuclear procurement as soon as possible. The expected cost of the project will be announced once the procurement process has been finalized." While Zuma and his deputy Cyril Ramaphosa back the nuclear program, the Treasury is more circumspect. "Nuclear would be a substantial financial commitment and government can only make the final commitment after careful and thorough modeling and an affordability assessment," it said in an e-mailed response to questions on June 29.

The Treasury's three-year budget released Feb. 25 provides for the budget deficit to be cut to 2.5 percent of gross domestic product by the year though March 2018, from 3.9 percent this financial year, and doesn't allocate any money for new nuclear plants. Moody's Investors Service rates South African debt at Baa2, the second-lowest investment grade, while Standard & Poor's has an assessment one level above junk.

'Ambitious Program': ... While the government may consider requesting companies to build, own and operate the nuclear plants subject to power-purchase agreements, developers don't favor such deals because the projects are so capital-intensive, said Elchin Mammadov, a utilities analyst for Bloomberg Intelligence. Most reactors in developing countries other than China and India are likely to be financed with 15- to 20-year subsidized loans provided by the suppliers' host nations, he said by phone from London on June 29.

While the government may consider requesting companies to build, own and operate the nuclear plants subject to power-purchase agreements, developers don't favor such deals because the projects are so capital-intensive Most reactors in developing countries other than China and India are likely to be financed with 15- to 20-year subsidized loans provided by the suppliers' host nations, he said by phone from London on June 29.

Financing Difficulty: The government will battle to finance the plants even if it gets cheap loans, and off-take agreements are the only viable nuclear option if power-tariff increases can be contained, said Nazmeera Moola, an economist at Investec Asset Management. ... Electricity prices in South Africa have almost quadrupled since 2007. Detailed financial analysis should precede any decision to invest in additional nuclear capacity, said Harald Winkler, the Energy Research Centre's director. "There are serious questions that need to be answered as to whether South Africa is able to finance this program and how any investment would have to be repaid," he said by phone on June 26. "It's very unclear."

Source: http://www.biznews.com/, 06 July, 2015.

NUCLEAR STRATEGY

USA

Pentagon Says It Needs $270 Billion to Upgrade Nuclear Arsenal

The US will need to spend as much as $18 billion per year for 15 years starting in 2021 to keep the nation's nuclear stockpile and the weapons and vehicles designed to deliver these weapons viable…. Carrying out this plan will be an expensive proposition. It is projected to cost DoD an average of $18 billion a year from 2021 through 2035," Deputy Defense Secretary Bob Work told members of the House Armed Services Committee at 25 June, 2015, hearing on nuclear deterrence.

The US will need to spend as much as $18 billion per year for 15 years starting in 2021 to keep the nation's nuclear stockpile and the weapons and vehicles designed to deliver these weapons viable…. Carrying out this plan will be an expensive proposition.

...The US Navy and Air Force have already seen problems creep up with operations and morale within their nuclear forces. Both services faced cheating scandals in recent years. The Air Force's two top leaders were fired in 2008 after former Defense Secretary Robert Gates faulted the leaders for losing focus on the nuclear mission. The Pentagon is already pursuing several acquisition efforts to boost the nuclear triad, but many have high price tags and the Air Force and Navy are trying to figure out how to pay for them under restricted budgets.

The Air Force plans to announce a contract this summer for its next-generation bomber program, called the Long Range Strike Bomber, or LRS-B. The Navy is working with Congress to secure funding for its Ohio Replacement Program, a new-generation of nuclear-armed ballistic missile submarines slated to arrive by the early 2030s. The new LRS-B planes are expected to cost about $550 million each and the Navy hopes it can keep the cost of its Ohio Replacement submarines for under $5 billion per boat. Many defense analysts have called those estimates ambitious after the services have had a record for going over budget in recent years on other big budget acquisition programs like the Joint Strike Fighter and the Ford-class aircraft carrier. Congress has identified a new National Sea Based Deterrence fund designed to identify money to pay for the Ohio Replacement submarines, however most of the needed money for the fund has yet to be identified. Rep. Joe Courtney, D-Conn., said Congress was working vigorously to identify money for the fund....

Congress has identified a new National Sea Based Deterrence fund designed to identify money to pay for the Ohio Replacement submarines, however most of the needed money for the fund has yet to be identified. Rep. Joe Courtney, D-Conn., said Congress was working vigorously to identify money for the fund.

.***Russian Saber Rattling***: Work stressed that Russian, Chinese and North Korean nuclear weapons development continues to engender a dangerous and high-threat global environment. "While we seek a world without nuclear weapons, we face the harsh reality that Russia and China are rapidly modernizing their already capable nuclear arsenals – and North Korea intends to develop nuclear weapons and the means to deliver them against the US. A strong nuclear deterrent force will remain critical to our national security," Work said.

Citing the fact that senior Russian officials continue to make irresponsible statements about their nuclear forces, Work said the US and NATO were not intimidated but rather strengthened in solidarity. "As Secretary Carter has recently said, Moscow's nuclear saber-rattling raises questions about Russia's commitment to strategic stability – and the profound respect that world leaders in the nuclear age have shown in the brandishing of these weapons," he added. The Russian military is currently modernizing its arsenal of ICBMs and advancing its nuclear weapons' technologies,

Work said. Work stressed that Russia continues to violate the INF agreement, reached between President Ronald Reagan and Mikhail Gorbachev in the late 1980s.

Chinesenuclear modernization is also on the Pentagon's radar, Work explained. The Chinese are placing multiple warheads on their ICBMs, expanding their mobile ICBM force and continuing to pursue sea-based nuclear weapons. "However, we assess that this modernization program (China) is designed to ensure they have a second strike capability and not to seek a quantitative nuclear parity with the US or Russia.... Work said the stepped up effort would require about 7 percent of the Pentagon's annual budget. "The choice right now is modernizing or losing deterrence. Without additional funding, sustaining this level of spending will require very, very hard choices that will impact the other parts of our defense portfolio," he explained. HASC Chairman Rep. Mac Thornberry, R-Texas, said spending 7 percent of the Pentagon budget on its top security priority seems reasonable and appropriate. "It seems to me that it is not unreasonable to say that it's in the ballpark," he said.

This modernization program (China) is designed to ensure they have a second strike capability and not to seek a quantitative nuclear parity with the US or Russia The choice right now is modernizing or losing deterrence. Without additional funding, sustaining this level of spending will require very, very hard choices that will impact the other parts of our defense portfolio.

Source: http://www.military.com/, *25 June 2015.*

BALLISTIC MISSILE DEFENCE

USA

US Missile Industry Running into Limits, Seeking Overseas Buyers

Various reports confirm a growing sense not only among the leaders of the US's army and navy but also in the MDA that the country's current strategy for missile defense is running into limitations. Not only are sharp cuts in the defense budgets making it hard for the US military to cover the massive cost of developing and acquiring these weapons systems, but there are unanswered questions about their reliability. This issue was first raised in the Pentagon by Gen. Raymond T. Odierno and Adm. Jonathan Greenert, chiefs of staff of the army and navy. In November of last year, the two chiefs sent a single-page memo to Defense Secretary Chuck Hagel titled "Adjusting the Ballistic Missile Defense Strategy."

The memo - called an "eight-star memo" since it was written by two four-star generals - was leaked to the public in March of this year. In the memo - which the Hankyoreh acquired on July 5 - the two chiefs argue that the ballistic missile threat of potential enemy states continues to grow and is indeed outgrowing the US's current defense capabilities. "Our present acquisition-based strategy is unsustainable in the current fiscal environment," the chiefs said. "Now is the opportunity to develop a long-term approach that addresses homeland missile defense and regional missile defense priorities - a holistic approach that is more sustainable and cost effective, incorporating 'left-of-launch' and other non-kinetic means of defense." "Left-of-launch" means stopping a missile while it is still on the launch pad, while "non-kinetic means of defense" are ways of neutralizing an enemy's missile control through cyber warfare and electronic technologies such as jammers and lasers.

Various reports confirm a growing sense not only among the leaders of the US's army and navy but also in the MDA that the country's current strategy for missile defense is running into limitations. Not only are sharp cuts in the defense budgets making it hard for the US military to cover the massive cost of developing and acquiring these weapons systems, but there are unanswered questions about their reliability.

In sum, the two chiefs' argument is that, because of limitations in the current missile defense

strategy of intercepting enemy missiles in the air, the military needs to shift to a strategy of striking missiles or neutralizing the enemy's ability to control those missiles before they are launched. The Chief of Staff of the Air Force did not sign the memo, presumably because the air force is not very involved in missile defense strategy. It turns out that the position of the army and navy leadership on this issue is shared by the Missile Defense Agency, which is responsible for US missile defense. MDA Deputy Director Brig. Gen. Kenneth E. Todorov told reporters at an event held in Washington, D.C., on June 18 that the current US missile defense strategy is "not sustainable," according to a report by military trade journal Breaking Defense.

With potential enemies acquiring more missiles, "you can't continue to buy these interceptors and have enough to necessarily intercept everything that's out there," the journal quoted Todorov as saying. The interceptors needed for missile defense are much more expensive than the enemy missiles they are supposed to shoot down, and given the current financial circumstances, the US would be hard put to cover this cost. "It's important to have a capability that the warfighter cares about and can rely on and has confidence in," Todorov was quoted as saying. "We've got to do less procurement, more RDT&E." RDT&E stands for research, development, testing, and evaluation.

These comments mean that, as the performance of the current interceptors used in missile defense is being called into question, the US military should be focusing on improving performance instead of increasing acquisitions. According to *Breaking Defense*, there is considerable support at the Pentagon for the suggestions in the two chiefs' memo but implementing them will require getting Congress on board. Along with this, some analysts think that the US military is trying to find a way around its limited defense budget by selling its weapons systems for missile defense to other countries. This could be related to talk about deploying the THAAD (Terminal High-Altitude Area Defense) weapons system on the Korean Peninsula. The US could claim that it would be deploying THAAD with US Forces Korea (USFK), not selling it.

Past experience suggests, however, that THAAD would first be deployed with USFK and then later be sold to South Korea. "We can't afford to keep building. It is too expensive. What the US administration is hoping is that other countries like South Korea and Israel will buy them instead to keep production line open. So we can't afford them. That what is all Generals are saying. It is not sustainable. One solution is other countries buy them. It would help," Philip Coyle, former assistant secretary of defense and director of operational test and evaluation, told the Hankyoreh. Dr. J. Michael Gilmore, the current director of operational test and evaluation, met the Hankyoreh's Washington correspondent during an event on June 25 organized by the Atlantic Council, a Washington think tank. When asked whether the memo by the two chiefs would affect the US's deployment of THAAD on the Korean Peninsula, Gilmore said, "The two chiefs' memo goes behind missile defense for defending the continental US and calls for a reassessment of our whole missile defense policy." While this would suggest that the memo could affect the deployment of THAAD on the Korean Peninsula, Gilmore declined to respond in detail since he is not responsible for this area of policy.

It is too expensive. What the US administration is hoping is that other countries like South Korea and Israel will buy them instead to keep production line open. So we can't afford them. That what is all Generals are saying. It is not sustainable. One solution is other countries buy them. It would help.

Source: http://english.hani.co.kr/, *06 July 2015.*

NUCLEAR ENERGY

INDIA

L&T Delivers Indigenously Designed Reactor for Nuclear Plant

L&T Heavy Engineering has delivered its first indigenously designed pressurised heavy water

reactor for the nuclear plant being developed by Nuclear Power Corporation in Gujarat. The first of the two nuclear 700 MWe steam generators was delivered at the Kakrapar nuclear plant on June 16 and another generator will be dispatched on 11 July 2015, the company said in a release on 03 July 2015. A nuclear steam generator is one of the most critical safety class one equipment in a nuclear island. It enables heat transfer from heavy water to generate steam, which drives turbines to generate electricity. Each steam generator weighs about 215 tonnes and made of special low alloy quenched and tempered steel with nickel-iron-chromium alloy tubes and stainless steel internals.

A nuclear steam generator is one of the most critical safety class one equipment in a nuclear island. It enables heat transfer from heavy water to generate steam, which drives turbines to generate electricity. Each steam generator weighs about 215 tonnes and made of special low alloy quenched and tempered steel with nickel-iron-chromium alloy tubes and stainless steel internals.

MV Kotwal, President (Heavy Engineering), Larsen & Toubro said the completion of the steam generator is a major milestone towards 'Make in India' vision of the government. The 3D multi-phase thermal hydraulic analysis and safety analysis including accidental conditions were designed in-house by L&T. The nickel-iron-chromium alloy U-Tubes were manufactured as a joint effort with Nuclear Fuel Complex, Hyderabad. L&T Special Steel and Heavy Forgings, a 65000 sq. meter integrated facility at Hazira, will supply forgings for future nuclear power plant projects. LTSSHF is a joint venture between L&T and NPCIL.

Source: http://defencenews.in/, 05 July 2015.

JAPAN

Fuel is Loaded into Kagoshima Reactor as First Restart Nears

Kyushu Electric Power Co. on 7 July 2015 afternoon began loading fuel into the No. 1 reactor at its Sendai power station in preparation for a restart in mid-August, the first under safety standards adopted in response to the Fukushima crisis. The 890,000-kilowatt unit in the city of Satsumasendai, on the west coast of Kagoshima Prefecture, will also be the first to be brought back on line since 2012. But local concerns remain about the possibility of damage due to volcanic activity and how people living within 30 km of the two-reactor plant would be evacuated if a disaster hits.

A spokeswoman for Kyushu Electric said the fuel loading is a 24-hour operation and involves inserting into the reactor 157 fuel rod assemblies currently stored in an adjacent fuel pool. The first fuel was loaded early 7 July, 2015 afternoon, she said, and the last of the assemblies are expected to be inserted by 10 July, 2015. If there are no problems with loading the fuel and starting up the reactor, further safety checks of the electricity grid will be conducted. If given the all-clear, Kyushu Electric will begin selling nuclear-generated electricity by mid-September. The Sendai No. 1 reactor passed the Nuclear Regulation Authority's safety standards last September, making it the first reactor since the March 11, 2011, quake and tsunami and three meltdowns at the Fukushima No. 1 plant to be cleared for restart under the new rules. With the exception of Kansai Electric Power Co.'s Oi No. 3 and No. 4 reactors in Fukui Prefecture, which were online from July 2012 to September 2013, all of Japan's commercial reactors have been offline since the disaster. The NRA has also cleared the Sendai No. 2 reactor, which Kyushu Electric hopes to restart by mid-October. Since the stricter requirements for restarts went into effect in July 2013, operators have applied for safety inspections on 25 reactors at 15 plants nationwide.

If there are no problems with loading the fuel and starting up the reactor, further safety checks of the electricity grid will be conducted. If given the all-clear, Kyushu Electric will begin selling nuclear-generated electricity by mid-September.

The loading of the fuel into the Sendai No. 1 reactor came the same day as the government announced revisions to the basic disaster response plan that, it says, will improve communications and coordination between Tokyo and local entities if a natural and nuclear disaster occur at the same time. But Ryoko Torihara, a resident of Satsumasendai and a long-term anti-nuclear activist, said that the NRA, Kyushu Electric and local officials are rushing to a restart without a thorough analysis of the risk of volcanic damage and with questions remaining about evacuation plans. "It's quite strange the NRA did not have any volcanic experts on its committee when it accepted the word of Kyushu Electric that the possibility of a gigantic volcanic eruption, called a caldera eruption, was extremely small," she said. In addition, evacuation plans for those within 30 km of the plant are vague. There are questions about how to assist the infirm, or even whether there would be enough bus drivers to help get people out, she said.

The loading of the fuel into the Sendai No. 1 reactor came the same day as the government announced revisions to the basic disaster response plan that, it says, will improve communications and coordination between Tokyo and local entities if a natural and nuclear disaster occur at the same time.

Source: http://www.japantimes.co.jp/, 07 July 2015.

UAE

UAE Nuclear Project Enters Critical Phase

The UAE's nuclear energy programme, which has been held up by the industry worldwide as a model for newcomers to nuclear energy, is facing its biggest challenges in the run in to its first reactor's start-up, scheduled for late 2017. The Emirates Nuclear Energy Corporation (Enec) has so far hit all of its milestones since construction began on the US$40 billion programme in 2012, and in June installed the plant's second reactor vessel at the Barakah site in Abu Dhabi's remote Western Region. Now, however, the UAE's programme moves into its most difficult final phase for the first reactor, in which a number of interlinked challenges could mean delays, according to well-placed sources.

The programme, which has a building budget in excess of $20bn, with another $20bn estimated cost to run the plant over its 60-year life, is strategically important for the UAE. It expects to generate about 15 per cent of its growing electricity demand from nuclear power by 2020, when all four of its reactors are due to be fully operational. The programme is also being closely scrutinised as an exemplar for the whole of the Middle East, where a number of countries are keen to develop nuclear energy for peaceful purposes.

The programme, which has a building budget in excess of $20bn, with another $20bn estimated cost to run the plant over its 60-year life, is strategically important for the UAE. It expects to generate about 15 per cent of its growing electricity demand from nuclear power by 2020, when all four of its reactors are due to be fully operational. The programme is also being closely scrutinised as an exemplar for the whole of the Middle East.

"The UAE nuclear programme is very special as it is the first newcomer to start building in 27 years," said Marta Ferrari, a nuclear engineer in the Nuclear Power Infrastructure Group of the IAEA in Vienna. "Being the first in a long time, it was bound to get a lot of scrutiny and attention," she added. Although the first reactor is nearly 75 per cent complete and is on time and on budget, industry executives said that the last phase would be the toughest. "With a nuclear plant it gets a lot more complicated at the end when all the pieces have to come together," said an executive who was until recently one of Enec's senior division heads, and who did not want to be quoted by name. "The first 80 to 90 per cent is pretty standard construction," added the local head of a Barakah subcontractor. "The last bit is the really hard part."

As the project moves into that final stage, it faces three related issues that could cause delays and add costs, several industry executives said. The first and most problematic challenge for Barakah is the fact that its prime contractor, Kepco, has run into a series of difficulties at Shin Kori, 450 kilometres south-east of Seoul, where it is developing the prototype project for its APR-1400 reactor, the same model it is building at Barakah. Barakah is reliant on Shin Kori reactors 3&4 for its operating procedures template, a crucial connection that is reflected in the fact that Kepco faces financial penalties under its Barakah contract if it misses milestones on the Shin Kori programme. Second, the UAE's Federal Authority for Nuclear Regulation (FANR) is coming under budget pressure at a time when it should be adding staff, according to a number of senior nuclear executives. FANR executives said privately that budget cuts would slow down the programme at some point. Finally, the already complex final stage of any new nuclear programme is complicated further by the fact that the UAE uniquely blends systems and senior staff from a range of countries, and has other unique features that have to be accommodated.

The main threat to keeping Barakah on schedule is the fact that a combination of fraud and faulty parts has meant that Kepco's Shin Kori 3&4 have been delayed by more than a year, and a start-up date remains uncertain. "The UAE, certainly in order to meet the project timelines, is tied to the Korean procedures and processes across the board," said the former Enec division head. "There had to be some changes to Barakah to account for the differences in seawater temperature, the dusty environment, and the high ambient summer air temperature ... and a different electrical system [but] the UAE plants are built on the same basic design." The Shin Kori project was already delayed in 2013 after safety-related control cabling installed by a Korean company, JS Cable, failed various tests. That came on the heels of an investigation that found falsified documentation on cabling on parts of the project and delayed start-up on Shin Kori reactors 3&4 to 2015 and 2016, respectively.

There were even further delays after a test run of Shin Kori 3 last November resulted in a nitrogen gas leak that killed three workers at Korea Hydro & Electric Power (KHEP), the plant operator. South Korea's Nuclear Safety and Security Commission held two hearings in April but has deferred a decision about Shin Kori 3 until after it can determine if the problem has been fixed, according to Yonhap, South Korea's state-funded news agency. A new start-up date cannot be determined until the Korean companies negotiate with General Electric of the US, which has recalled the faulty valves that caused the November leak, Yonhap reported. "GE expects the replacement process may take five or six months, but a specific time will be confirmed after we complete negotiations with the company," KHEP said in April.... GE was not able to say when the faulty parts would be replaced. A spokesman for Enec said: "It is important to note that the units in Barakah do not share the components that caused delays in the reference plant, so there is no impact to the construction of the plants.

Therefore, the development of Shin Kori 3 is a Korean domestic matter and Kepco is working under the strict guidelines of the Korean nuclear regulator to obtain its operational licence." But several people involved in Barakah said getting approval of the safety procedures could be delayed even if the supply chain for the parts is different for the UAE project. The former Enec division head said "the most significant impact that could occur at this point would be if [the Korean regulator] or FANR found a problem with the Shin Kori 3 safety analysis". Already, the Korean regulator has failed to pass Shin Kori 3 on several occasions because of the faulty parts and it will be extra vigilant after the deaths of plant workers. Kepco, meanwhile, has an agreement with Enec to run Shin Kori-3 by September to demonstrate that it is fully operational, or it must pay penalties if it fails to do so. Enec has in the past month or so been interviewing law firms with nuclear industry experience so that it has representation lined up in the event that the contractual timeline is not met, according to people familiar with the process. Enec said that it "does not discuss business-sensitive matters" and declined to

comment on the contract or legal issues.

The nuclear project's most challenging phase also comes at a time when UAE government agencies, including FANR, are under budget pressure after last year's sharp drop in oil prices. FANR's budget last year was Dh219.89 million, with staff levels of about 190, and senior industry people said it should be adding resources rather than contemplating cuts.... But the former Enec executive commented: "I'm not surprised to hear that they officially say they have the resources to review the operating licence [but] my impression was that they were significantly understaffed for what they have been charged to do. The question I would have is what time frame are they talking about? Do they think they can review the licence with existing resources and meet Enec's projected timelines? My opinion is that it's unlikely." The other unique challenge for the UAE is that it draws its personnel – both at Enec and at FANR – from a wide spectrum of nationalities.

The nuclear project's most challenging phase also comes at a time when UAE government agencies, including FANR, are under budget pressure after last year's sharp drop in oil prices. FANR's budget last year was Dh219.89 million, with staff levels of about 190, and senior industry people said it should be adding resources rather than contemplating cuts.

As Ms Ferrari at IAEA pointed out, the other country which is building a nuclear reactor for the first time – Belarus – has the advantage of being a Russian-speaking country.... "The UAE is a blend of US and western European philosophies" in terms of the plant safety and emergency response procedures ... said the former Enec executive.... "Is there an impact of taking a Korea-based design and dropping it into the UAE environment? No doubt." He added: "Having a multinational, multicultural and multilingual workforce certainly adds a layer of complexity to the UAE project. A great deal of effort has been placed on trying to address potential issues in this area, and it will have to continue to be an area of emphasis for the foreseeable future."

The UAE has so far shown that it has the ability to meet the demanding requirements needed to start a nuclear energy industry from scratch, said Jean-Francois Lafortune, who was the IAEA's coordinator for the agency's emergency preparedness review mission to the UAE this year. In its March report, the IAEA mission noted a number of areas of excellence in the UAE's system, including its unique co-location of on-site and off-site operation centres at Al Ruwais. It also noted some areas that need improvement, for example that "all emergency response organisations need to ensure that sufficient qualified personnel are available for a prolonged response to protect the public", and it called for improving ways of informing the public about problems. ...

Source: http://www.thenational.ae/, 07 July 2015.

RUSSIA

Rosatom's successes continued in 2015, with new memorandums for nuclear power plant construction signed with Argentina, China, Indonesia and other countries on reactor construction and nuclear power cooperation. Rosatom also signed a contract to build a new plant in Bangladesh and expects to sign a contract with Egypt for its new power plant. Rosatom also began the construction of Iran's Bushehr nuclear power plant after a breakthrough in Iranian nuclear talks.

Russia's Rosatom Remains World Leader in Nuclear Reactor Design

Russia's Rosatom state nuclear corporation is the world leader in nuclear power plant reactor projects with 30 being designed in 2014, according to a report from the company's reactor design subsidiary Atomproekt. The total number of projects Rosatom worked on in 2014 amounts to 41 percent of the world's planned reactors. US energy company Westinghouse was the second-biggest with 17 reactors being designed and South Korea's Korea Hydro & Nuclear Power was third with 12 reactors.

Rosatom's successes continued in 2015, with new memorandums for nuclear power plant construction signed with Argentina, China,

Indonesia and other countries on reactor construction and nuclear power cooperation. Rosatom also signed a contract to build a new plant in Bangladesh and expects to sign a contract with Egypt for its new power plant. Rosatom also began the construction of Iran's Bushehr nuclear power plant after a breakthrough in Iranian nuclear talks. During the Saint Petersburg Economic Forum, Iran's rival Saudi Arabia also approached Russia for the construction of 16 reactors, which Kiriyenko valued at $100 billion.

Source: http://sputniknews.com, 03 July 2015.

NUCLEAR NON-PROLIFERATION

IRAN

Six World Powers Adopt Nuclear Deal with Iran

World powers have adopted a final, comprehensive agreement with Iran that will govern its nuclear program for over a decade. The deal culminates a two-year diplomatic effort in which the five permanent members of the United Nations Security Council, led by the United States, have sought to end a twelve-year crisis over Iran's suspicious nuclear work.

Formally known as the Joint Comprehensive Plan of Action, the 100-page document amounts to the most significant multilateral agreement reached in several decades. Its final form is roundly opposed in Israel — by the government, by its opposition, and by the public at large. The JCPOA allows Iran to retain much of its nuclear infrastructure, and grants it the right to enrich uranium on its own soil. But the deal also requires Iran to cap and partially roll back that infrastructure for ten to fifteen years, and grants the UN's nuclear watchdog, the IAEA, managed access to monitor that program with intrusive inspections. In exchange, the governments of Britain, France, Russia, China, the US and Germany have agreed to lift all UN sanctions on the Islamic Republic — once Iran abides by a set of nuclear-related commitments.

The moment Tehran receives sanctions relief will be on "implementation day," as one senior administration official put it on 14 July morning in Vienna. That date is not set, and is entirely reliant on the pace of Iran's initial haste in preparing for life under the deal. Once Iran has reduced its stockpile to just 300 kilograms of uranium hexafluoride, disconnected and removed some of its infrastructure and neutered its heavy-water plutonium reactor at Arak, the UN Security Council will vote to lift all sanctions at once.

The moment Tehran receives sanctions relief — including access to an estimated $100 billion in frozen assets overseas — will be on "implementation day," as one senior administration official put it on 14 July morning in Vienna. That date is not set, and is entirely reliant on the pace of Iran's initial haste in preparing for life under the deal. Once Iran has reduced its stockpile to just 300 kilograms of uranium hexafluoride, disconnected and removed some of its infrastructure and neutered its heavy-water plutonium reactor at Arak, the UN Security Council will vote to lift all sanctions at once.

Negotiators failed to meet the standard of achieving "anytime, anywhere" access Instead, in the event Iran objects to an IAEA request for access to a specific site, a "clock" will begin that grants the two sides 14 days to negotiate. If that period expires without any resolution reached directly between Iran and the IAEA, the Joint Commission would have seven days to advise them on a way forward. Iran would then have three days to comply with the commission's final advice, bringing the total time on the clock to 24 days.

A Joint Commission has been established to adjudicate disagreements in the deal and, if necessary, vote to demand access to a specific site, or to request the reimposition of sanctions. The commission will be comprised of one delegate each from the permanent five members of the Security Council, Iran and the EU.

Negotiators failed to meet the standard of achieving "anytime, anywhere" access that several members of the United States Congress had demanded as a part of any nuclear

deal. Instead, in the event Iran objects to an IAEA request for access to a specific site, a "clock" will begin that grants the two sides 14 days to negotiate. If that period expires without any resolution reached directly between Iran and the IAEA, the Joint Commission would have seven days to advise them on a way forward. Iran would then have three days to comply with the commission's final advice, bringing the total time on the clock to 24 days.

Instead, in the event Iran objects to an IAEA request for access to a specific site, a "clock" will begin that grants the two sides 14 days to negotiate. If that period expires without any resolution reached directly between Iran and the IAEA, the Joint Commission would have seven days to advise them on a way forward. Iran would then have three days to comply with the commission's final advice, bringing the total time on the clock to 24 days.

... Should Iran fail to comply with the commission's requests — or should it violate the deal in any other "significant" way — a majority can vote to refer the complaint to the full UN Security Council. But the Security Council would not then vote to renew sanctions on Iran. Rather, it would be a vote to keep sanctions relief in effect — and would require just one permanent member's veto to end it. That mechanism means that sanctions could snap back in place with action from the United States alone, the official noted.

Iran has agreed explicitly in the deal to "generally allow" IAEA access — wording sought by the US after Iran's history of generally rejecting such access. Tehran has also agreed to sign on to the IAEA's Additional Protocol, which broadens access, in a binding manner and in perpetuity. "Above and beyond" its commitments made in a political agreement reached back in April, Iran has also agreed not to work on any technologies required for the construction of a nuclear warhead. That provision, US officials said, also does not have an expiration date.

The IAEA's investigation into Iran's military nuclear work, according to US officials, will have to be addressed to the IAEA's satisfaction before sanctions are relieved. But the details of that query, similarly, will be for the IAEA and Tehran to sort out for themselves.

Newly developed electronic seals will physically cap much of Iran's nuclear infrastructure, and the IAEA will also use new, online enrichment measurements to monitor activity in the cascades of centrifuges Iran will be allowed to retain. That number is small, but not zero: 5,060 centrifuges, first constructed in the 1970s, will be allowed to enrich uranium to a low grade at Natanz for the first decade of a deal. The Arak installation will be converted into an altogether new design, based on conceptual models of a peaceful plutonium reactor that still uses heavy water. Outside of its April agreements, US officials say that Iran's heavy water stocks — stored in "beer kegs" — will also be monitored.

Not everything in the JCPOA will be made public, but the entire deal will be provided to Congress. "Everything that we know — that the administration knows — Congress will know," said a second senior American official. The official was referring, in part, to the future of Iran's research and development into advanced centrifuges, beyond it 1970s models, as well as other equipment necessary for the construction of an industrial-sized nuclear program beyond 2025.

According to Western powers, the deal ensures that Iran cannot produce the materials necessary to build a nuclear weapon without the world having one year's notice. That, among non-proliferation experts, is colloquially referred to as "breakout time." But that standard sunsets in ten years. After a decade, officials could not say how Iran's program would develop. The future outlook of Iran's program, one US official said, is a matter between Iran and the IAEA.

... The IAEA's investigation into Iran's military nuclear work, according to US officials, will have to be addressed to the IAEA's satisfaction before

sanctions are relieved. But the details of that query, similarly, will be for the IAEA and Tehran to sort out for themselves. In a prepared statement released on 14 July morning, IAEA director general Yukiya Amano said that all of the agency's outstanding questions — on issues past and present — must be resolved by October 15 of this year. A final report will be prepared by December.

... Final negotiations toward the deal slogged through eighteen days in Austria's capital. And the technical task of precisely translating the text, and of reviewing each provision, held up announcement of the deal. But it was that morning when Federica Mogherini, the European Union's foreign policy chief and coordinator of the talks, began her morning meeting with her colleagues with news that the process could not go on any longer. They agreed to push through to the finish line, and the hardest talks took place on that day, an official close to the process said.

The final issue that challenged negotiators was language of a UN resolution that details the expiration of an embargo on conventional arms. The US agreed to allow the embargo to expire in five years, and to allow another embargo on missiles to expire in eight years. ... The agreement came midday. Toward midnight on 13 July, various delegations began scheduling media interviews and preparing their press corps for an announcement ceremony at the city's Austria Center, outside the heart of the city.

Nuclear deal concluded between major powers and Iran on 14 July was "a historic mistake for the world." "In every area where it was supposed to prevent Iran attaining nuclear arms capability, there were huge compromises.

... The deal now goes to Congress for a 60-day review period. The US legislature will then have the opportunity to hold a non-binding vote to approve or disapprove of the deal. Both Kerry and Zarif took time for prayer during their prolonged stays in Vienna. Iran's delegation marked Ramadan with a night at Imam Ali, an Islamic center, on July 6, one night before the second of four total deadlines; And Kerry attended a mass at the city's central Stephansdom on July 12, just hours before the deal was ultimately sealed. ...

Source: http://www.jpost.com/Middle-East/Iran-nuclear-deal-reached-408871, 14 July 2015.

Iran Nuclear Deal Historic Mistake, Says Israeli Benjamin Netanyahu

Israeli Prime Minister Benjamin Netanyahu said a nuclear deal concluded between major powers and Iran on 14 July was "a historic mistake for the world." "In every area where it was supposed to prevent Iran attaining nuclear arms capability, there were huge compromises," his office quoted him as saying at the start of a meeting with Dutch Foreign Minister Bert Koenders. Netanyahu has long opposed any deal with Iran, and Israel has signalled it could take military action if need be to stop the Islamic republic from obtaining a nuclear weapons capability.

He has taken his campaign to the US Congress and the UN General Assembly but ultimately failed to block the deal. "You can't prevent an agreement when those negotiating it are prepared to make more and more concessions to those shouting 'Death to the United States' even as the talks are in progress," Netanyahu said on 14 July. "Iran will get hundreds of billions of dollars with which it will be able to fuel its terror machine," he said, referring to the expected lifting of crippling Western sanctions on its oil and banking sectors.

Source: http://www.ibnlive.com, 14 July 2015.

NUCLEAR COOPERATION

CHINA–FRANCE

China, France Strengthen Nuclear Cooperation

The agreement on cooperation in power reactors is signed by EDF chairman and CEO Jean-Bernard Lévy, CNNC general manager Qian Zhimin and Areva CEO Philippe Knoche. A number of agreements were signed on 29 June, 2015, between Chinese and French nuclear energy companies aimed at strengthening their cooperation in the nuclear fuel cycle and power reactors. The agreements were signed in Paris during a meeting between Chinese premier Li

Keqiang and French prime minister Manuel Valls. The first is a memorandum of understanding (MOU) between Areva and China National Nuclear Corporation (CNNC) "marking a new step forward in the Chinese project for a used fuel processing and recycling facility." Areva said the MOU "formalizes the end of technical discussions, defines the schedule for commercial negotiations and confirms the willingness of both groups to finalize the negotiations in the shortest possible timeframe."

The first is a memorandum of understanding (MOU) between Areva and China National Nuclear Corporation (CNNC) "marking a new step forward in the Chinese project for a used fuel processing and recycling facility." Areva said the MOU "formalizes the end of technical discussions, defines the schedule for commercial negotiations and confirms the willingness of both groups to finalize the negotiations in the shortest possible timeframe.

Areva also signed an agreement with CNNC for cooperation in the nuclear fuel cycle. This agreement, it said, "enlarges and deepens existing areas of cooperation". It covers the extraction and conversion of uranium, fabrication of zirconium fuel assemblies, decommissioning, transportation and recycling.

Another agreement was signed between Areva, EDF and CNNC on cooperation in nuclear power reactors. This calls for the partners "to study, in particular, the possibility of closer cooperation in medium- and high-power reactors, particularly in the area of industrial procurement". The agreement also covers greater cooperation in research and development. A letter of intent was also signed between Areva, EDF and China General Nuclear (CGN) on "establishing a long-term partnership in the field of medium- and high-power reactors, which takes into account, in particular, experience from Taishan Phase 1." Taishan units 1 and 2 are the first two reactors based on Areva's EPR design to be built in China. They form part of an €8 billion contract signed by Areva and CGN in November 2007. Taishan 1, which has been under construction since 2009, is expected to start up in 2016, while Taishan 2 is scheduled to begin operating a year later. Work is to begin on a further two EPR units at Taishan over the next few years.

In March 2014, a joint statement was issued by French president Francois Hollande and Chinese president Xi Jinping that saw the two leaders pledge to encourage "industrial and institutional" stakeholders in both nations to advance cooperation efforts in the entire nuclear fuel cycle, including nuclear power plant safety, used fuel recycling, new build projects and uranium mining. Cooperation agreements were signed between EDF and CGN and by Areva and CNNC in January during a visit to Beijing by the French prime minister. EDF and CGN agreed to share their experience of plant operation and engineering support for existing nuclear power plants. Meanwhile, Areva and CNNC signed an MOU on establishing a joint venture to supply nuclear transport and logistics services.

Source: http://www.eurasiareview.com/, 02 July 2015.

The increase in uranium supply is a boon to Modi's energy plans. India, which has increasingly faced an energy-deficit, dealing with blackouts and leaning heavily on coal has begun to focus on building up its nuclear power capabilities in recent years. India has seven nuclear power plants, which operate a total of 21 nuclear reactors. Six more nuclear reactors are under construction. India's aim is to supply a quarter of its electricity from nuclear power by 2050, an ambitious goal.

INDIA–KAZAKSTAN

India Inks New Nuclear Deal with Kazakhstan

The recent deal will see Kazakhstan supply India with 5,000 metric tons of uranium between 2015 and 2019. In an agreement reached while Indian Prime Minister Narendra Modi visited Kazakhstan July 6, Central Asia's largest economy and the world's largest producer of uranium will supply India with 5,000 metric tons of nuclear fuel in the 2015-2019 period. Between 2010 and 2014, Kazakhstan supplied India with 2,100 metric tons of uranium. While expressing pleasure at the "much larger second contract," Modi noted that Kazakhstan was "one of the first countries with which we [India] launched civil nuclear cooperation."

The increase in uranium supply is a boon to Modi's energy plans. India, which has increasingly faced

an energy-deficit, dealing with blackouts and leaning heavily on coal has begun to focus on building up its nuclear power capabilities in recent years. India has seven nuclear power plants, which operate a total of 21 nuclear reactors. Six more nuclear reactors are under construction. India's aim is to supply a quarter of its electricity from nuclear power by 2050, an ambitious goal.

Last summer, Modi directed the Department of Atomic Energy totriple India's nuclear capacity to 17 GWe by 2024. Initially, the development of Indian nuclear power production was largely independent. Excluded from the NPT because it acquired nuclear weapons after 1970, Indian nuclear energy development proceeded without external fuel sources or technical assistance. In September 2008, however, the NSG that controls the export and re-transfer of nuclear materials–granted India a waiver, allowing it to engage in international nuclear trade. The waiver came after significant US pressure, most clearly stated in the signing of the Indian-US Civil Nuclear Agreement in 2006. India now has uranium contracts with Kazakhstan, Russia, Mongolia, Argentina, and Namibia. Kazakhstan produces 38 percent of the world's uranium–22,451 metric tons in 2013–more than the next three top producers combined (Canada, Australia, and Niger). The country is also set to host the IAEA's LEU bank, a facility which will stockpile LEU, used in civilian nuclear power reactors, in order to assure supply to members should they experience a disruption.

India now has uranium contracts with Kazakhstan, Russia, Mongolia, Argentina, and Namibia. Kazakhstan produces 38 percent of the world's uranium–22,451 metric tons in 2013–more than the next three top producers combined (Canada, Australia, and Niger). The country is also set to host the IAEA's LEU bank, a facility which will stockpile LEU, used in civilian nuclear power reactors, in order to assure supply to members should they experience a disruption.

While Kazakhstan is decidedly rich in nuclear materials, it has distinguished itself as a firm proponent of nonproliferation and peaceful use of civilian nuclear power. In 1991, when the Soviet Union dissolved, newly-independent Kazakhstan inherited a sizable stockpile of Soviet nuclear weapons–the world's fourth largest at the time. The Semipalatinsk test site, also called the Polygon and located on the Kazakh steppe, had been the scene of more than 450 nuclear tests over four decade of Soviet control. In the 1990s Kazakhstan worked to repatriate the weapons, and was declared nuclear-free in 1995. Twenty years later, in an article published by *The Diplomat*, Kazakh foreign minister Erlan Idrissov said "This history explains the determination of Kazakhstan and its citizens to campaign for a permanent end to nuclear testing and, in the long run, a nuclear weapon-free world." India and Kazakhstan also made a number of other agreements during Modi's visit, covering military cooperation, coordination on counterterrorism, and range of economic and business deals. The uranium supply agreement, between Kazakhstan's state nuclear energy supplier Kazatomprom and India's Department of Atomic Energy, is just a small part of increasing cooperation between the two countries.

Source: http://thediplomat.com/, 09 July 2015.

RUSSIA–IRAN

Rosatom May Develop Iran Fordo Scientific Center under N. Deal with Powers

Russia's Rosatom State Atomic Energy Corporation may be involved in the development of a scientific and research center in Iran's Fordo under Tehran's deal with the six world powers, a western diplomat said on 6 July, 2015. The project in Fordo will be implemented by Russia's Rosatom "if such a scheme is agreed finally and in detail," the source told Itar-Tass. A western diplomatic source said 5 July, 2015 Iran and the Group 5+1 (the five permanent UN Security Council members plus Germany) have come to an understanding on solving the issues linked to a reactor in Arak and the facility in Fordo.

An Iranian diplomat later said China may get a significant share in a consortium on the reconstruction of the heavy-water reactor in Iran's

Arak, the Russian outlet said. In May, Deputy Head of Russia's Rosatom Nicolai Spassky voiced his company's willingness to begin building two new nuclear power plants in Southern Iran. "Rosatom is interested in beginning work for building Bushehr II and III nuclear power plants in Southern Iran," Spassky said in a meeting with Iranian Ambassador to Moscow Mehdi Sanayee in the Russian capital. The senior Russian nuclear official underlined that Rosatom is ready to sign an agreement with the Atomic Energy Organization of Iran (AEOI) on building the new nuclear power plants.

Source: http://english.farsnews.com, 06 July 2015.

RUSSIA–TUNISIA

Tunisia, Russia to Sign Nuclear Energy Agreement in October

Russia and Tunisia are set to conclude an intergovernmental agreement on nuclear energy cooperation during an intergovernmental commission session in October, Tunisian Ambassador to Russia Ali Gutali said on 03 July, 2015. On June 1, 2015, a MoU for cooperation on the peaceful use of nuclear energy was signed by deputy director general of Russia's Rosatom state nuclear corporation Nikolai Spassky and Gutali. The document outlined the legal basis for assistance in the development of basic nuclear energy infrastructure in Tunisia. "We are now in the phase of preparing an intergovernmental agreement in order to reach the second stage of carrying out the articles of agreements in practice. An intergovernmental commission will be held in October, the agreement will be signed as part of that intergovernmental commission," Gutali told *RIA Novosti*. Earlier this year, Russia signed contracts for the construct of nuclear plants with Egypt and Jordan

A MoU for cooperation on the peaceful use of nuclear energy was signed by deputy director general of Russia's Rosatom state nuclear corporation Nikolai Spassky and Gutali. The document outlined the legal basis for assistance in the development of basic nuclear energy infrastructure in Tunisia.

Source: http://sputniknews.com/, 03 July 2015.

USA–MEXICO

Westinghouse to Play Key Role in Mexico's Energy Future

Electricity generated from nuclear energy can play an increasing role in providing the safe and clean baseload power that Mexico envisions for its future energy supply, according to a Westinghouse Electric Company executive in the region. During the XXVI Annual Congress of the Nuclear Society of Mexico being held in Puerto Vallarta, Westinghouse Latin America Vice President Carlos Leipner said: "Mexico's growing population and energy consumption point to the need for developing new power generation sources, as detailed in the country's National Energy Strategy. Nuclear energy is well positioned to meet the need." Additionally Leipner said nuclear energy has the unique ability to meet Mexico's energy requirements by producing reliable energy that generates economic growth and a high standard of living, while creating zero carbon emissions. This supports Mexico's stated goal of achieving 35 percent clean power generation by the next decade.

Nuclear energy has the unique ability to meet Mexico's energy requirements by producing reliable energy that generates economic growth and a high standard of living, while creating zero carbon emissions. This supports Mexico's stated goal of achieving 35 percent clean power generation by the next decade.

Westinghouse and its majority owner, Toshiba Corporation, have a long history of supporting energy infrastructures. In Mexico, Westinghouse has assisted the Comisión Federal de Electricidad in numerous projects at the Laguna Verde Nuclear Power Station associated with achieving extended power uprate certification over the years.

Westinghouse has also provided maintenance and analytical services to complete outages and maintain plant reliability…. Westinghouse is committed to providing ongoing technical support at the Laguna Verde 1&2 nuclear power station and also looks forward to working with stakeholders in Mexico to bring the company's newest nuclear energy technologies to the country….

Westinghouse's collaboration with partners in Mexico will build on its long history of working with countries worldwide to advance their commercial nuclear energy programs, and provide a full range of services and fuel for their operating plants. In addition to products and services for operating nuclear power plants, Westinghouse also offers the next-generation AP1000 nuclear power plant. The plant is based on an advanced Gen III+ technology with innovative passive safety systems, modular construction techniques and unparalleled licensing pedigree.

Eight AP1000 units are currently under construction in the US and China with more under development. "The AP1000 plant is ideally suited for development in Mexico," said Leipner. "Its advanced passive safety systems, strong licensing pedigree and modular construction techniques provide delivery certainty to Mexico and will offer multiple decades of clean-energy production for consumers." Westinghouse Electric Company, a group company of Toshiba Corporation, is the world's pioneering nuclear energy company and is a leading supplier of nuclear plant products and technologies to utilities throughout the world….

Source: http://www.marketwatch.com/, *07 July 2015.*

NUCLEAR TERRORISM

INDIA

JNPT Deploys Nuclear Radiation Detection System

The Jawaharlal Nehru Port (JNPT) has gone one step tighter in its surveillance by installing a Radiological Detection Equipment device that can check illegal transport of illicit nuclear material. The system designed and manufactured by Electronics Corporation of India Ltd (ECIL) can help in monitoring this highly dangerous material at entry and exit points of the country. The Chairman & Managing Director of ECIL handed over the critical homeland security system to Neeraj Bansal, Chairman In charge, JNPT, Mumbai in presence of RK Sinha, Chairman, AEC and Secretary, DAE. JNPT is the largest container port in India handling major container traffic of the country. RDE is of extreme importance in the present scenario of increasing nuclear terrorism.

JNPT has gone one step tighter in its surveillance by installing a Radiological Detection Equipment device that can check illegal transport of illicit nuclear material. The system designed and manufactured by Electronics Corporation of India Ltd (ECIL) can help in monitoring this highly dangerous material at entry and exit points of the country.

It consists of vehicle monitors, pedestrian monitors, radiation survey meter and isotope identifiers, a press release by ECIL said. The system is mainly a detection device that provides a passive, non-intrusive means to screen containers and pedestrians for the presence of nuclear and radioactive materials. This equipment alerts security personnel by means of audio/visual alarms locally and remotely. A camera, which is part of the equipment, records the number plate of the vehicle / image of the person in the event of alarm. The alarm events can also be sent as SMS alert on mobile to respective seaport and DAE authorities. Sinha said that installation of this equipment strengthens national security while Neeraj Bansal told that installation of this equipment promotes compliance to international agreements and enhances trade opportunities.

Source: http://www.thehindubusinessline.com, 06 July 2015.

PAKISTAN

Pakistan PM Denies Nuclear Material May Leak Into Hands of Terrorists

Media speculations regarding possible threats of Pakistan's nuclear program materials leaking into the hands of terrorist groups are absurd and malicious, Pakistani Prime Minister Nawaz Sharif said on 6 July 2015.

Sharif stressed that Islamabad was "firmly committed to the principles of non-proliferation and export control, compliance with the measures of protection and security. In regard to the export control policy, Pakistan fully complies with international principles and is regularly checked. The measures taken by Pakistan are fully endorsed by the international community, including the International Atomic Energy Agency," Sharif told RIA Novosti in an interview. On May 14, the US Congress released a report on Pakistan, according to which the security of the country's nuclear arsenal, materials, and technologies is a top-tier US concern over fears that it all may fall into the hands of terrorists. Prior to that, also in May, an article published in an ISIL propaganda magazine Dabiq said the militants wanted to buy a nuclear weapon in Pakistan and then smuggle it into the US.

Sharif stressed that Islamabad was "firmly committed to the principles of non-proliferation and export control, compliance with the measures of protection and security. In regard to the export control policy, Pakistan fully complies with international principles and is regularly checked. The measures taken by Pakistan are fully endorsed by the international community, including the International Atomic Energy Agency.

"Such claims are absolutely groundless, absurd and malicious. Pakistan is a nuclear-armed power, which is responsible for their actions. We have 40 years of experience in the field of safe and secure nuclear energy." Pakistan is known to have nuclear weapons but is not a signatory to the NPT.

Source: http://sputniknews.com, 06 July 2015.

The court petitioners cited US Nuclear Regulatory Commission standards that civilian plants should be located in low population density zones with no more than 500 people per square mile. The population density at the proposed Karachi site is some 6,450 per square mile; once the reactors are built there would be more people living and working in proximity to them than any other reactor in the world.

NUCLEAR SAFETY

CHINA–PAKISTAN

China is Building Two Untested Nuclear Reactors on Pakistan's Coast

Pakistan has agreed to the construction of two nuclear reactors in Karachi, a coastal city in a tsunami-prone zone. After the 2011 Fukushima disaster in Japan, scientists and civil society activists are asking why. Pakistan's largest city and financial hub has given China a green light to build two nuclear power stations on a beach about 15 miles from downtown, raising public alarm over both the location – the coastline is vulnerable to tsunamis – and the fact that the nuclear reactors are new and untested.

Karachi approved the plan in late June when the city's environmental agency deemed, "after careful review," that the project was safe. Yet the impact assessment on the reactor site, at a popular beach known as Paradise Point, remains secret. Now environmentalists, nuclear experts and civil society activists are shouting with unusual gusto that the reactors, due to be completed by the China National Nuclear Cooperation, a state-owned company, within five years, represent a wholly unacceptable risk and fall far short of international safety standards. "We have become the guinea pigs in this nuclear experiment," says Pervez Hoodbhoy, a nuclear physicist and leader of the civic opposition. "Sensible people would not even buy a used car without driving it…and no airline would consider buying a new jet-liner without extensive testing. Nuclear reactors have systems far more intricate than those inside the most complex passenger aircraft."

High Population Density: Earlier this year, Dr. Hoodbhoy and several petitioners obtained a stay of work on the project from the high court in Sindh Province, where Karachi is located. But Pakistan's federal government in Islamabad intervened to start the process again on ground of national security. The court petitioners cited US Nuclear Regulatory Commission standards that civilian plants should be located in low

population density zones with no more than 500 people per square mile. The population density at the proposed Karachi site is some 6,450 per square mile; once the reactors are built there would be more people living and working in proximity to them than any other reactor in the world.

Yet the government of Prime Minister Nawaz Sharif, which pushed and sealed the deal for Karachi, appears more focused on tackling Pakistan's energy deficit. Karachi, a city of 20 million, faces its own acute shortages….. China, for its part, represents the only producer ready to build civilian nuclear power stations in Pakistan, since Islamabad is not a signatory to the NPT and can't make such purchases on the international market. The model of reactor to be built in Karachi is the ACC-1000, also known as the Hualong-1.

In the 1990s, China was believed to have helped Pakistan develop its nuclear program after India tested a nuclear device. "China is looking for nuclear customers and currently doesn't have any except Pakistan," argues Hoodbhoy, "and since Pakistan is forbidden from purchasing reactors from the open market, this leaves China as its sole supplier. So concerns of nuclear safety are being put on the backburner.

Based on Chinese designs adapted from a French prototype, it reportedly has additional safety features. But to date, the Chinese model only exists on paper as no reactors have been built. The Sindh court petitioners point out that in the 1990s, China sold Pakistan four reactors that, when first tested in China, had design problems that had to eventually be fixed by a US firm.

Safety vs. Infrastructure Investment?: … In the 1990s, China was believed to have helped Pakistan develop its nuclear program after India tested a nuclear device. "China is looking for nuclear customers and currently doesn't have any except Pakistan," argues Hoodbhoy, "and since Pakistan is forbidden from purchasing reactors from the open market, this leaves China as its sole supplier. So concerns of nuclear safety are being put on the backburner."

The US embassy in Islamabad this spring issued a statement raising "concerns" with the Karachi nuclear project saying "we [the US] urge China to be transparent regarding this cooperation." Critics say the Chinese reactors pose a risk for some two-dozen coastal villages, along with Karachi, in the event of a Fukushima-type nuclear accident caused by tsunami or a quake. Last fall after an UN-sponsored exercise on emergency preparedness, scientists said that a major quake in the Makran Trench in the Indian Ocean could trigger waves of between three and 23 feet along the Pakistani coast, including Karachi. A massive undersea quake in 1945 killed an unknown number of people there. The scientists said that the waves would likely hit the Karachi coast within 90 minutes. "Going by the past record of both provincial and national disaster management authorities, you'd be hard pressed to find an iota of hope in their capability to manage any disaster let alone a nuclear disaster," says Norbert Almeida, an international corporate risk analyst based in Karachi.

Source: http://www.csmonitor.com, 06 July 2015.

ARMENIA–RUSSIA

Armenia, Russia to Exchange Information on Nuclear and Radiation Safety

The Russian Government on 6 July 2015 approved an intergovernmental agreement with Armenia on the operative exchange of information on nuclear and radiation safety, *RIA Novosti* reports. Exchange of information on nuclear and radiation safety, including in case of nuclear accidents, is a widely accepted international experience. The draft agreement submitted by Rosatom State Atomic Energy Corporation has been worked out in cooperation with the Armenian party and coordinated with the Russian Foreign Ministry and other interested executive agencies. The Russian Government has instructed Rosatom to work with

the Foreign Ministry to hold negotiations with the Armenian side, and sign the agreement on behalf of the Russian Government if talks succeed.

Source: http://www.armradio.am, 06 July 2015.

CHINA

China Conducts Emergency Response Exercise on Nuclear Accident

China's National Nuclear Emergency Response Center has held an exercise on emergency response on nuclear accidents. The exercise, code named Shendun-2015, aimed to simulate the response to a simulated accident in a nuclear plant. Yao Bin is the deputy of National Nuclear Emergency Response Center: "For this simulated accident, we designed such scenario that the emergency response was launched as a nuclear plant showed abnormal signs, soon an earthquake rocked the place and caused power cut-off outside the plant, followed by diesel engine breaking down, leading to radioactive substance leakage." In dealing the accident, the emergency commanding headquarters gathered experts from 27 accident related departments to discuss a rescue scheme at the Nuclear Emergency Center. Via a surveillance screen, the headquarters was able to contact and direct rescue teams at various levels. Professional rescue teams, traffic departments, medical groups and other related departments were also summoned in to tackle the simulated accident.

Source: http://english.cri.cn/12394/2015/06/27/3821s884805.htm, 27 June 2015.

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 Vinod Patney, SYSM PVSM AVSM VrC (Retd).

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

Edited by: Director General, CAPS

Editorial Team: Hina Pandey, Arjun Subramanian P, Chandra Rekha

Composed by: CAPS