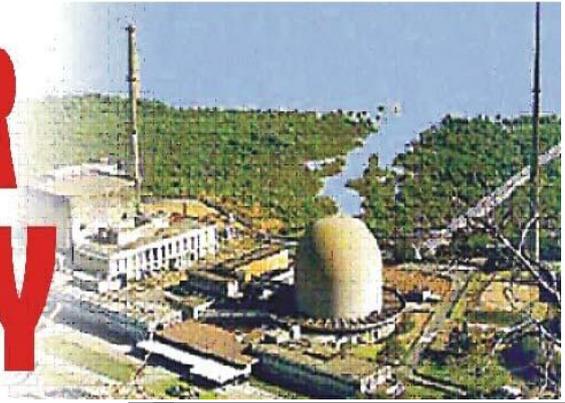


NUCLEAR SECURITY



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

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OPINION - Sanjaya Baru

A Flashback to Victory

Addressing the nation for the first time from the ramparts of Delhi's Red Fort, on 15 August 2004, PM Singh declared, playing on Robert Frost's lines, "Today, I have no promises to make, but I have promises to keep." The reference being to the fact that his agenda in office would be defined by the National Common Minimum Programme (NCMP) arrived at between the constituents of the coalition he headed. It is not a secret that almost every important policy initiative taken by the first UPA 1, save the nuclear deal, was embedded in the NCMP. The historic India-US agreement for cooperation in the development of civil nuclear energy, and the subsequent end to what Singh has called "the nuclear apartheid" against India by the NSG, that normalised and "legitimised" India's status as a nuclear weapons power, was Singh's own promise to the country that he finally kept.

The nuclear deal was not an NCMP commitment because it was only after Singh took charge as PM that he discovered that his predecessor, Atal Bihari Vajpayee, had initiated an important dialogue with President George W. Bush of the US towards this end. When the deed was finally done, Singh told Vajpayee, as the two stood alone at Singh's official residence, "I have completed what you began."

It is not, therefore, surprising that when PM Singh was asked, at last week's press conference in New Delhi, what he thought was the "high point" of his decade in office, he promptly said, "the best moment for me was when we were able to strike a nuclear deal with the US to end the nuclear apartheid, which had sought to stifle the processes of social and economic

India's nuclear power generation was going down month after month in the early 2000s with a decline in the availability of the required fuel. India's domestic production of uranium was not meeting the requirements of the nuclear power sector and imports were constrained by international restrictions. What the nuclear deal did was to remove the external constraint.

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change and technical progress of our country in many ways."

That was indeed his personal achievement in office. The rest being the product of the UPA's jointly adopted NCMP. Two criticisms have been levelled against Singh for claiming that getting the nuclear deal through was his "best moment". The first criticism has come from the supporters of the UPA government who wonder why the PM mentioned the nuclear deal rather than any of the important "rights" legislated by the government. The right to employment, information, education and food, claim these critics, ought to have figured higher on the PM's list. The second criticism has come from the UPA's opponents who claim

the nuclear deal was just a "dud" and has not added a single megawatt of nuclear power to the country's power generation capacity.

The second criticism is easily answered with facts. India's nuclear power generation was going down

month after month in the early 2000s with a decline in the availability of the required fuel. India's domestic production of uranium was not meeting the requirements of the nuclear power sector and imports were constrained by international restrictions. What the nuclear deal did was to remove the external constraint. Having entered into the 123 agreement with India, the Bush administration lobbied with member countries of the NSG, including a recalcitrant China, to lift the restrictions on the supply of nuclear fuel to India. The capacity utilisation at India's existing nuclear power plants has gone up from as low as 30 per cent in the months preceding the deal to over 80 per cent. India's access to global supply of nuclear fuel is a concrete benefit of the nuclear deal. So, the deal was no "dud".

It is true that plans for new nuclear power plants have not come to fruition, but that has to do both with the increased global risk aversion to nuclear energy after the Fukushima tragedy and to international concerns about India's nuclear liability law. The second UPA government (UPA 2) was unable to get through Parliament the original draft of the liability law it wanted, which would have met international standards and expectations and kept costs lower. Instead, it succumbed to opposition pressure and brought forward an amended law that has been criticised by all nuclear power plant suppliers, including the Russians, French and Japanese, not to mention the Americans, and has raised the cost of nuclear power.

For India's civil nuclear power programme to move forward, the government has to rework or reinterpret its liability law. UPA 2 has been incapable of this. Only a future government can address the problem. The response to the first criticism would be that, at the press conference, the PM was asked what was the "best moment for him" (emphasis added) in his decade in office. Implementing the various promises of the NCMP would have given satisfaction to all the constituents of the UPA. But the nuclear deal was "his" personal initiative, for which he risked the survival of his government. To have been able to deliver on that promise would naturally constitute a moment of personal triumph.

Here again, the opposition has claimed that the deal was finally done after Singh secured a "tainted" victory in the July 2008 vote of confidence. The facts about that victory, when revealed, will absolve Singh of that charge. Aware that he would in fact secure a majority, various political actors may have decided

to "taint" it by staging the "votes-for-cash" scam. But that is a different story.

The fact is that a significant majority of public opinion backed Singh's tough stance against the CPM hardliners, they saw his resolve as being in the national interest, they liked the fact that the prime minister of the country was standing up for something and was willing to go down fighting, and they rewarded him a year later with a handsome victory in the general elections. Singh, the media declared in one voice, "is king"! If Singh did not view the nuclear deal as the high point of his decade in office, what else could he?

Source: <http://indianexpress.com/>, 06 January 2014.

OPINION-Sitakant Mishra

Crisis Perception and Diplomacy Mismatch in South Asia

Taking inkling from Michael Krepon's views in Arms Control Wonk, I wish to add the missile aspect to his assertion: "The dynamism of nuclear weapon [and missile]-related developments on the subcontinent contrasts markedly with somnambulant diplomacy to reduce nuclear [and missile] dangers". While there is absence of any substantive talks to reduce the dangers emanating from new developments in the arena of nuclear weapons, there seems no realization also of the fact that nuclear capable cruise and short-range missiles in South Asia have exacerbated the challenges of deterrence stability.

A Track-2 initiative the Colombo Group led by two scholars, Gurmeet Kanwal from India and Feroz Hassan Khan from US prescribes for a CBM on the basis of the idea that the first generation SRBMs like Prithvi-I and Hatf-I of India and Pakistan respectively, are obsolete and a verified phased approach to their retirement can be attempted.

Undoubtedly, any CBM proposal based on solid foundation and

realistic assessment is worth attempting by India and Pakistan. However, the two candidates identified by the Colombo Group – Prithvi-I and Hatf-I – are not of the same taxonomy today. As per general understanding, while Prithvi-I is still in service, (most probably) Hatf-I is already withdrawn; a new version, Hatf-IA, has been inducted in the year 2000.

The two candidates identified by the Colombo Group – Prithvi-I and Hatf-I – are not of the same taxonomy today. As per general understanding, while Prithvi-I is still in service, (most probably) Hatf-I is already withdrawn; a new version, Hatf-IA, has been inducted in the year 2000.

From the operational point of view, since Prithvi missiles are inducted in large numbers during the last few decades, they would remain the mainstay in India's 150-km range category missiles till Brahmos and Prahar are inducted in large numbers. Of course, DRDO Chief Avinash Chander has reportedly said that "we are withdrawing the tactical 150 km-range Prithvi missiles and will replace them with the Prahar missiles, which are more capable and have more accuracy". However, tested for the first time in 2011, Prahar will have to undergo a few more technology demonstration tests followed by user trials in the coming years; therefore, it will take some more time to really replace Prithvi, if at all it is obsolete.

Therefore, the merit of the proposal by the Colombo Group needs serious scrutiny. At the outset, one would wonder if the proposition is doable or realizable. Given the level of distrust and suspicion between India and Pakistan, an outright proposal to verify and withdraw inducted armaments from service is easier said than done. Also, there have been occasions when the exchanged list of nuclear facilities (as a provision of the non-attack of each other's nuclear facilities agreement) has not been wholly accepted by the two sides – one side doubting the authenticity of the list of the other. Secondly, unlike Pakistan, whose security concerns are India-centric, India's potential challenge also emanates in a big way from China. Therefore, any disarmament/arms control measure between India and Pakistan goes beyond bilateral terms. Thirdly, if the role of the so-called obsolete missiles is to be replaced by some other systems in both countries – as they have already embarked on this process – what purpose the proposed CBM is going to achieve?

Instead, two pressing issues that South Asia will grapple with in the foreseeable future – the spread of nuclear weapon capable cruise missiles; and management of a nuclear weapons related accident, if arises – need urgent attention. The expanding cruise missile inventory in South Asia necessitates revisiting the contours of deterrence stability, and military-CBMs in vogue in South Asia. The threat of ballistic missiles and nuclear weapons does indeed remain a great concern, but are not the only form of

contingency that this region is currently experiencing. One perceived strategic implication of the (nuclear) cruise missiles, especially with Pakistan, is that it has "lowered the index of stability in the region". Moreover, the changing calculus of nuclear deterrence caused by the improving accuracy and diversification of missile delivery systems in South Asia, and the increasingly blurred line between nuclear and conventional forces has made the regional security situation precarious. While there exists a CBM on reducing ballistic missiles threat, no substantive perception has evolved yet on the crisis escalation potential of the nuclear cruise missile in South Asia.

On the other hand, nuclear weapons inventories of both India and Pakistan are in an expansion mode. While India is in the process of establishing the third leg of its nuclear triad, Pakistan, in addition to acquiring TNWs, has constituted its Naval Strategic Force Command in 2012. A diversified nuclear and missile force is prone to accidents or inadvertent use. Though there is no precedent of a nuclear weapons related accident yet in either country, the chances of occurring of such an incident cannot be ruled out completely. Cognizant of the consequences of the risks involved, in 2007 India and Pakistan have signed the Agreement on Reducing Risk from Accidents Relating to Nuclear Weapons. However, except reaffirming the agreement for another five years in 2012, no initiative is undertaken yet to implement or put in place institutional arrangements for dealing with such a situation, if ever arises.

To that extent, for the last five years (after the Mumbai terror attack in 2008), New Delhi and Islamabad have not conducted any substantive, high-level, purpose-driven talks on these serious issues. Meanwhile, both countries have focused on military modernization and diversification of their respective force structure. This signifies the existence of a mismatch of crisis perception and setting the diplomatic agenda in South Asia; consequently, the Track-2 level initiatives have remained nonstarters.

Source: <http://southasianvoices.org/>, 09 January 2014.

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OPINION - Milad Jokar

Why Does Netanyahu Want To Sabotage the Iran Nuclear Deal?

A rapprochement with Iran will weaken Israel's standing in the region and the Israeli PM's governing coalition. After a decade of deadlock, the historic interim deal signed in Geneva represents the first significant victory for Iran and the six world powers. Reaching a final deal would also be a victory for the Israel because it will guarantee that Iran would never have the means to develop nuclear weapons. So, why does Israeli PM vehemently oppose this win-win agreement and call it "a historic mistake"?

Creating a Palestinian state living side-by-side with Israel in "peace and security" has always been US President Obama's priority along with the Iranian crisis. If world powers find a way out of the Iranian nuclear crisis, the Israeli-Palestinian conflict will be back at the top of the international community's agenda.

Israeli settlement expansion represents a violation of international law and the deadlock in the Israeli-Palestinian peace process gives Netanyahu's coalition government space to keep "authorising" more construction in the Occupied Territories. As a reminder, Netanyahu's Likud (centre-right) party formed a pro-settlement coalition - from centrist to far-right political parties - to win the election. The Minister of Housing and Construction, Uri Ariel, stated that "there can only be one state between the Jordan River and the Mediterranean Sea - Israel".

Netanyahu's coalition government logically finds an interest in maintaining the status quo with the Palestinians. Moreover, the failure of the Geneva agreement would keep the international community's focus on Iran rather than the Israeli-Palestinian peace process.

Additionally, ending the Iranian nuclear crisis will put the UN conference on a Middle East zone free of nuclear weapons back on the world powers agenda with greater credibility. The issue of Israel's nuclear arsenal will then become almost impossible to dodge, which could eventually jeopardise Israel's regional arms hegemony.

The status quo that preceded the Geneva agreement - increased crippling sanctions against Iran combined with the constant threat of military strikes - isolated Iran significantly and increased Israeli and Saudi geopolitical influence as well as their economic and military advances. Ahmadinejad's incendiary diatribes and approach regarding negotiations made it much easier to isolate Iran through sanctions. It has also, somewhat, justified the US Congress' approval for nearly \$3bn to Israel in military aid annually. As a matter of fact, the former director of Mossad, Ephraim Halevy, stated in 2008: "Ahmadinejad is our greatest gift." According to him, "We couldn't carry out a better operation at the Mossad than to put a guy like Ahmadinejad in power in Iran."

Iran's foreign minister talks to Al Jazeera

As a consequence, hardliners in Israel and Washington consider the victory of the moderate

Hassan Rouhani and the space he gave to diplomacy, as a threat to the status quo because Rouhani's handling of the nuclear crisis could lead to a potential final agreement.

The US-Iran rapprochement that would result of such a deal would shift the balance of power in the Middle East. Indeed, solving the crisis would mean - eventually - the lifting of sanctions and,

ultimately, the end of Iran's isolation. Iran would then get back to its natural position in the region and, geopolitically, it is a heavyweight in the Middle East.

Netanyahu's ideological discourse is not irrational, and aims at maintaining its anti-Iran coalition in both Israel and Washington. His coalition government was fuelled by an aggressive and confrontational anti-Iran rhetoric. The huge political capital invested in this discourse matched former conservative president Mahmoud Ahmadinejad's investment in his anti-Israel rhetoric.

With Ahmadinejad gone, Netanyahu is now trying to overshadow Rouhani's discourse of moderation and engagement by constantly rehashing the famous "wipe off the map" quote attributed to Ahmadinejad. Even though Netanyahu's former Minister of Intelligence Dan Meridor, confirmed last

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year in an interview with Al Jazeera that Ahmadinejad was misquoted, Netanyahu still politically utilises the former Iranian president's provocative speeches to foster Iran's negative image in the West.

It is in this same effort that Netanyahu explained that Rouhani "revealed his true face sooner than expected" when his statements on the occupation of Palestinian lands were distorted to become a threat on the existence of Israel itself. To this day, Netanyahu presents Rouhani - who was elected by 51.7 percent of the Iranian population for his moderation and willingness to engage with the West - as "a wolf in sheep's clothing".

While some pro-Israeli lobbies, such as J Street, oppose Netanyahu's vision and support the Geneva agreement, numerous hard-line pro-Israeli lobbies, such as AIPAC, and numerous Congressmen such as Robert Menendez, Lindsey Graham and Mark Kirk literally repeat Netanyahu's characterisation of Iran as "an existential threat" in order to prevent a thaw between Iran and the West.

The Geneva agreement and the de-escalation of tensions with Iran mark a logical new chill between Obama and Netanyahu. Obama has rightfully guaranteed that the success of the Geneva agreement will secure the Israel. However, the success of diplomacy makes it politically difficult for Netanyahu to maintain his anti-Iran coalition. Netanyahu, recently slammed by former Israeli Prime Minister Ehud Olmert for his public provocations, is now in confrontation with the US government and his last hope is that the US Congress - which is about to enter the 2014 election campaign - will vote in favour of new sanctions and scuttle the Geneva agreement.

Source: Author is a political analyst specialising in the Middle East and Iran, <http://www.aljazeera.com/>, 11 January 2014.

OPINION-Zahir Kazmi

Pakistan's Energy Security

Energy shortages are driving Pakistanis to an edge and are exacerbating their economic insecurities as well. At places, people have taken to the streets for want of gas. Can these concerns be alleviated by an uninterrupted availability of inexpensive energy sources? Nuclear energy is affordable, whereas other sources are swiftly becoming either financially or politically unfeasible. A good recipe that comprises a mix of resources can enhance Pakistan's energy security. There is lots of criticism about the decision to construct two 2,200MW nuclear power plants (NPP) on Karachi's coastline by 2019. Interestingly, these

anxieties have been offered sans solutions. In November 2013, Nawaz Sharif had announced that his administration has envisioned that nuclear energy will add 40,000MW to the national grid by the year 2050 at an affordable cost. What role will nuclear power generation play in Pakistan's energy mix?

Pakistan has an installed electricity generation capacity of 22,797MW. The average demand is 17,000MW and the shortfall is between 4,000 and 5,000MW. Oil (35.2 per cent), hydel (29.9 per cent), gas (29 per cent), and nuclear and imported (5.8 per cent) are the principal sources. In the next 10 years, peak electricity demand is expected to rise by four to five per cent, which is roughly 1,500MW. This dismal forecast is due to a lopsided energy mix, diminishing indigenous fuel reserves, increasing circular debt and transmission hold-ups.

Pakistan has almost exhausted its gas reserves. Imported oil's price hikes affect the budget and its constant supply cannot be guaranteed. Pakistan has the potential to meet these energy challenges through hydel power but there are political and environmental issues in building dams. Rationality demands reducing reliance on oil and going for

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Pakistan will have to rely on imported fuels for the interim period at a huge cost. LNG is difficult to import, using coal has environmental issues, using shale gas also has environmental issues attached with it, and wind power has transmission network challenges.

Nuclear energy seems the best option for Pakistan because the cost of oil-based generation, other alternatives and their indigenisation is pretty high. The nuclear reactors that are being constructed in Karachi are called Advance China Pressurised-1000 reactors and are the latest technology over which China has complete intellectual property rights. These reactors are often confused with Chinese CPR-1000 design that is an advanced version of French M-310 technology. China also has complete intellectual property rights for that technology. It's a global norm that nuclear reactors are released for sale only after passing through several developmental stages. Like any other industry, there is always a first buyer and here Pakistan is no exception. Besides this, the IAEA's watchful eyes do not compromise on design and safeguards standards. International practices show that the close

proximity of reactors to Karachi should not be of great concern. Sixty-five out of 104 reactors in the US are within a 10-50 miles vicinity of densely populated states like New York. Despite the Three Mile Island nuclear disaster of 1979, those ageing American reactors pose no safety concerns. It has been internationally accepted that NPPs are more environment-friendly compared with fossil fuel-based plants. Industrialisation has its hazards even dams have environmental issues but the fact remains that NPPs provide clean and uninterrupted power supply at a competitive cost.

The two reactors have a reported US\$9.1 billion capital cost, which is expensive indeed. However, these will be cheaper in the long-term due to affordable power generation cost. China is not only providing the NPP technology; unlike other

suppliers, it is reportedly offering 82 per cent of the financing as well. The current energy basket rate for electricity generation in Pakistan is around Rs12.3/KWHR, which is calculated by taking a mean of the cost of electricity from all sources. In that sense, NPPs with a levelised cost of electricity in the range of Rs5-8/KWHR is worthwhile.

The Fukushima nuclear disaster in 2011 cast a dark spell on the use of nuclear energy but for a short while. Japan had abandoned its reliance on nuclear energy but has recently reverted its stance. The Fukushima disaster was not due to technical failures or inadequate safety features. An unparalleled tsunami completely swamped the back-up power for cooling the plants. China has offered cutting edge technology with the latest safety and design features. The Pakistan Nuclear Regulatory Authority

and the IAEA remain actively involved in selecting the sites for the new reactors and a thorough survey has been done in this regard.

There is a misperception that China has violated its obligations of the NSG in offering these reactors to Pakistan. It is worth noting that China is, in fact, meeting international legal obligations of a nuclear agreement that it made with Pakistan in 1986, which was before it joined the NSG in 2004.

This, notwithstanding, these reactors, will be under IAEA safeguards and will produce electricity, not bombs. The criticism about these reactors is political in context. This peaceful nuclear cooperation can be considered to be an effort on Pakistan's part to counterbalance the Indo-US nuclear deal and New Delhi's efforts to join the NSG, which is a nuclear export control cartel. The US offered the nuclear deal to India for economic returns and also because of New Delhi's so-called potential as a counterweight to Beijing. Pakistan's agreement with China predates the Indo-US nuclear deal and Islamabad has no extra-regional ambitions. The Pakistan-China deal does not violate international norms but the Indo-US nuclear deal does. The US bent its domestic laws and pressurised NSG members to bend theirs for potential trade with India.

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Nuclear energy is a quintessential part of Pakistan's energy mix. Scarce hydrocarbon sources pose political, economic and environmental issues. Nuclear energy is a safe and viable alternative. Pakistan spends \$1 billion in oil imports per 1,000 MW, which is not cost-effective. Nuclear energy can reduce that burden. China has shared the safest and the most cutting edge technology that will alleviate the burden on the Pakistani economy and enhance energy security no one else has made us such an offer. Nuclear energy is an effective solution that will produce uninterrupted electricity at an affordable price. Let's hope we overcome the simple challenge of switching on a light bulb.

Source: The writer is a visiting faculty member at the School of Politics & International Relations, Quaid-e-Azam University, <http://tribune.com.pk/>, 07 January 2014.

OPINION - The Daily Times

Chernobyl, Fukushima Combined? : Impacts of Nuclear Projects on Karachi Coast

Social scientists, activists and civil society members expressed serious concerns over the installation of two nuclear power plants along Karachi coast. They were speaking at a dialogue on 'Impacts of Nuclear Power Projects (K-II and K-III) along the Coastal Areas', jointly organised by Pakistan Fisherfolk Forum (PFF), Pakistan Institute of Labour Education and Research (PILER), ActionAid Pakistan and Strengthening Participatory Organisation (SPO) at a local hotel.

The participants demanded government to inform people about the dangers of the project and to provide exact data for public awareness regarding the dangers of nuclear energy. Noted scientists, Dr Pervez Hoodbhoy and Dr AH Nayyar, Executive Director of PILER Karamat Ali, Chairman of PFF Mohammad Ali Shah were the main speakers at the dialogue. Dr Hoodbhoy said the government has not considered the dangers of the nuclear power plants and these plants along the Karachi coast would pose a great danger to human lives in case of any accident. He recalled that radiation could start because of an earthquake, tsunami or terrorist act.

All over the world, nuclear power plants are being closed down, and countries like Germany, Japan and

Switzerland are now shifting to alternative energy options. He said a human error at Chernobyl power plant in 1980s caused about 8,000 to 24,000 deaths. The deaths because of cancer are uncounted. The radiation can mutate the genes of people and create permanent disabilities for centuries. Fukushima incident in Japan has further changed the world's thinking towards the nuclear power. The affects of radiation emitted from Fukushima reactors are still being felt after a passage of three years, he added.

After Chernobyl and Fukushima it was decided all over the world that nuclear power plants should not be established near a city. People are not allowed to live in 20-kilometre radius of Fukushima nuclear power plants. The experts know that there would be no agriculture production or fish surviving in the sea for many years. The renowned physicist reminded of the dangers of living on a coastline prone to both tsunamis and earthquakes, and said, "I am worried about operators' error or some terrorism incidents which can cause destruction of

the nuclear reactors of these power plants. In case of any accident, the deaths in Karachi may not be in hundreds, but may be in hundreds of thousands."

Dr Hoodbhoy regretted that developed countries were closing down nuclear power reactors, while China could not

find a buyer except Pakistan in the world. China is also providing \$6.5 billion loan to Pakistan for purchasing the nuclear reactors. He asked why alternative energy like wind and solar were not being used. In 2013 alone, Germany installed wind power plants with a capacity to produce 25,000MW, which is almost equal to the total installed capacity of Pakistan, which is around 23,000MW. "We need to look into the options we have, like Thar coal and building small dams," he said.

Senior physicist Dr AH Nayyar said at the moment, the total installed capacity of nuclear power plants was 725MW, including 125MW power plant at KANUPP that was established in 1971 and two reactors of 300MW each at Chashma. All these nuclear power plants cover only a total 3 percent of the total energy production. By 2030 Pakistan intends to install 8800MW. He said two reactors of 1100MW in Karachi would need a lot of water and when that water would be disposed off in the sea, which would create pollution and harm fish stocks and human lives.

By 2030 Pakistan intends to install 8800MW. He said two reactors of 1100MW in Karachi would need a lot of water and when that water would be disposed off in the sea, which would create pollution and harm fish stocks and human lives.

He regretted that only SITE Evaluation Report of the project has been prepared so far. Reactor Safety Report and Environmental Impact Analysis have not been made so far. He said Makran coast is termed tsunamigenic, where tsunami waves of 10 metres were witnessed after the 1945 earthquake. That earthquake caused life and property loss on Bombay coast, 1100 km away, and cut boats off mooring 1500 km away on Indian west coast. He feared that in case of an accident, the evacuation of the population was difficult in Karachi without an effective disaster management system.

Speaking about monetary interests, Dr Nayyar said Pakistan Atomic Energy Commission (PAEC) was establishing more nuclear power plants to assert its importance and claim a share in national resources. The PAEC received a budget of Rs 52-56 billion this year. Terming the decision a blatant violation of the 18th Amendment in the Constitution, PILER's Karamat Ali said neither the government, nor the people of Karachi were taken into confidence prior to the installation of power plants in the metropolis. Moreover, he said Article 19-A provides right to information, which does not mean that a citizen asks for the information, but that the government seeks the people's point of view by holding public hearings for such huge projects.

He further said that the right to life was also ensured in the Constitution, which means all possible dangers to human lives should be prevented and people informed of those dangers."Possibility of corruption cannot be ruled out in these deals. Someone has already acquired \$600-700 million commission by allowing such huge projects," Ali claimed. "There should be a regional position on nuclear power in South Asian countries because other countries are also in the race to install nuclear power plants."Mohammad Ali Shah said people living on the coastal belts were not taken into confidence and the government had made decisions in a clandestine manner.

The existing nuclear power plants at Chashma and KANUPP were already posing threats to

There should be a regional position on nuclear power in South Asian countries because other countries are also in the race to install nuclear power plants.

lives and livelihoods. With looming threats of terror activities, there were no studies available to confirm safety levels. Ellahi Bukhsh of SPO and Project Director of K-II and K-II Azfar Minhaj also spoke on the occasion. On 18 October 2011 the KANUPP Karachi nuclear power plant imposed a seven-hour emergency after water leaked from a feeder pipe to the reactor. The leakage started during a routine maintenance shut down. After the leakage was detected the emergency was imposed at the plant and the affected area was isolated.

Source: <http://www.dailytimes.com.pk/>, 09 January 2014.

OPINION- K.S. Parthasarathy

Is Working in A Nuclear Power Plant Risky?

Several studies of nuclear power plant workers have shown that work in a nuclear power plant is not a risky occupation. A 24-year-old man who was about to join the NPCIL and his parents were troubled by what they saw on a TV channel about the alleged damage to DNA by radiation. TV channels often go overboard and make unsubstantiated claims. A 63-year-old person asked this writer whether the throat malignancy, which, his 33-year-old daughter was suffering from, was likely due to the possible radiation exposure he might have received while working in a nuclear power plant when he was 28 years old. The explanations offered appeared to have dispelled their doubts.

Several extensive epidemiological studies of nuclear power plant workers have shown that work in a nuclear power plant is not a risky occupation. Radiation workers in nuclear industry like other radiation workers form a unique group. They are adult workers whose radiation doses received at work are regularly measured; these records are maintained.

Several extensive epidemiological studies of nuclear power plant workers have shown that work in a nuclear power plant is not a risky occupation. Radiation workers in nuclear industry like other radiation workers form a unique group. They are adult workers whose radiation doses received at work are regularly measured.

Radiation protection specialists accept that ionising radiation at high dose levels can cause cancer...Cancer induced by radiation is indistinguishable from those caused spontaneously or by other cancer-causing agents. Since

there are no unique biomarkers for radiation-induced cancer, specialists depend on statistical methods to predict cancer incidence in a group of exposed workers. Specialists have carried out long-term studies of these workers in many countries. Most of these studies have low statistical power.

To get statistically respectable population groups, specialists carried out a pooled study of radiation worker populations from 15 nations. The participants in this international collaborative study included 407,391 workers whose external radiation doses were individually monitored; the total follow up was about 5.2 million person-years. The study published in *Radiation Research* in 2007 quite unexpectedly showed statistically significant increased risks per unit of occupational ionising radiation dose for mortality from solid cancer and from all cancers excluding leukaemia, compared to those of A-bomb survivors.

The observation that the radiation risk at low doses is more than that at high doses attracted wide attention. In the pooled analysis, Canadian workers had the highest cancer radiation risk estimates among the 15 countries. None of the other 14 country cohorts individually had significantly raised cancer mortality risk estimates. Exclusion of Canadian workers (4 per cent of the sample) from the pooled analysis changed the findings to statistically non-significant. Critics questioned the data and the analytical validity of the study because of the apparent difference in the results between the Canadian and the 15-country studies.

A recent paper dispelled the disproportionate alarm caused by the pooled study. A paper published on 13 November 2013 in the *British Journal of Cancer*, indicated that the significantly increased risks for early AECL workers are most likely due to incomplete transfer of AECL dose records to the National Dose Registry. Researchers reported that the analysis of the remainder of the Canadian nuclear workers (93.2 per cent) provided no evidence of increased risk; also the risk estimate was compatible with estimates that form the basis of radiation protection standards.

"Study findings suggest that the revised Canadian cohort, with the exclusion of early AECL workers, would likely have an important effect on the 15-country pooled risk estimate of radiation-related

risks of all cancer excluding leukaemia by substantially reducing the size of the point estimate and its significance," the researchers clarified. Workers in nuclear power plants will receive some radiation dose. NPCIL has strict procedures in place to keep the doses to workers within the limits prescribed by the AERB. The AERB Annual Report of 2012-2013 ...indicates that in 2012 no radiation worker in any nuclear power plant exceeded the dose limits prescribed by AERB.

The average radiation dose varied from 0.35 mSv to 2.84 mSv, a fraction of the AERB annual dose limit of 30 mSv. Conclusions were similar in earlier years. At these doses, radiation risks, if any, are insignificant. Since the dose limits are based on conservative assumptions, it is inconsequential if anyone receives,

occasionally, a dose above the limit.

Radiation protection standards are based on studies by scholarly bodies such as the US National Academy of Sciences (NAS), Biological Effects of Ionizing Radiation Committee, the International Agency for Research on Cancer (IARC) and

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). They indicate that at low doses similar to those received by nuclear power plant workers radiation risks, if there are any, are negligibly small. Such risks are no risks at all. Work in a nuclear power plant is not a risky occupation.

Source: The author is Former Secretary, AERB, The Hindu, 01 January 2014.

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OPINION - George Monbiot

Nuclear Scare Stories a Gift to Truly Lethal Coal Industry

Most of the afflictions wrongly attributed to nuclear power can rightly be attributed to coal. I was struck by this thought when I saw the graphics published by Greenpeace recently, showing the premature deaths caused by coal plants in China. The research it commissioned suggests that a quarter of a million deaths a year could be avoided if coal power there were shut down. Yes, a quarter of a million. Were Greenpeace to plot the impacts of nuclear power on the same scale, the vast red splotches depicting the air pollution catastrophe suffered by several Chinese

cities would be replaced by dots invisible to the naked eye.

This is not to suggest that there are no impacts, but they are tiny by comparison. The WHO's analysis of the Fukushima disaster concludes that "for the general population inside and outside of Japan ... no observable increases in cancer rates above baseline rates are anticipated". Only the most contaminated parts of Fukushima prefecture are exposed to any significant threat: A slight increase in the chances of developing cancer. Even the majority of the emergency workers have no higher cancer risk than that of the general population. And this, remember, was caused by an unprecedented disaster. The deaths in China are caused by business as usual.

The tiny risk that is imposed by nuclear power has both obscured and invoked the far greater risk that is imposed by coal. Scare stories about nuclear power are a gift to the coal industry. Where they are taken seriously by politicians as they have been in Japan and cause a switch from nuclear to coal power, they kill people.

Since the tsunami in 2011, the internet has been awash with ever more lurid claims about Fukushima. Millions have read reports claiming that children on the western seaboard of the US are dying as a result of radiation released by the damaged plant. It does not seem to matter how often and effectively the stories are debunked: They keep on coming. But children in the US really are dying as a result of pollution from coal plants and we hear almost nothing about it. Plenty of reports also propose that the water on the Pacific coast of North America is now dangerous to swimmers and the fish there too radioactive to eat. Again, it is not true. Except in the immediate vicinity of the plant, any extra radiation to which fish in the Pacific are exposed is minute by comparison to the concentration in their tissues of polonium-210, which occurs naturally in seawater. There are, however, genuine dangers associated with another toxic contaminant found in fish: Mercury. What is the primary source of mercury pollution? Ah yes, coal burning.

In October 2013, for the first time, WHO officially listed both gaseous outdoor pollution and airborne

particulates as carcinogenic to humans. Exposure levels, it notes, are rising sharply in some parts of the world. In 2010, an estimated 223,000 deaths from lung cancer were caused by air pollution. But these cancers, though wildly outstripping those correctly attributed to man-made radiation, are just a small part of the pollution problem. Far greater numbers are afflicted by other diseases, including asthma, bronchitis, emphysema, heart disease, hypertension, strokes, low birth weight, pre-term delivery, pre-eclampsia and (through heavy metal exposure in the womb) impaired brain function.

Three hundred micrograms of fine particulates per cubic metre of air is classed as severe pollution, the point at which children and elderly people should not leave their homes. As Greenpeace points out, in Shanghai, a fortnight ago, and in Harbin, in October 2013, concentrations of particulates exceeded 500 micrograms. By far the greatest source of these particles is coal burning. In total, air pollution in northern China according to a study published in Proceedings of the National Academy of Sciences has cut average life expectancy by five-and-a-half years.

We have exported much of our pollution and its associated deaths, but the residue in our own countries is still severe. A study by the Clean Air Task Force suggests that coal power in the US causes 13,200 premature deaths a year. In Europe, according to the Health and

Environment Alliance, the figure is 18,200. A study cited by the alliance suggests that around 200,000 children born in Europe each year have been exposed to "critical levels" of methylmercury in the womb. It estimates the health costs inflicted by coal burning at between 15 billion euros (Dh76.29 billion) and 42 billion euros. Do you still reckon coal is cheap?

You are picturing filthy plants in Poland and Romania, aren't you? But among the most polluting power stations in Europe, Longannet in Scotland is ranked 11th and Drax, in England, is ranked seventh. Week before last, the House of Lords failed to pass an amendment that would have forced a gradual shutdown of UK's coal-burning power plants: They remain exempted from the emissions standards that other power stations have to meet.

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While nuclear power is faltering, coal is booming. Almost 1,200 new plants are being developed worldwide: Many will use coal exported from the US and from Australia. The exports are now a massive source of income for these supposedly greening economies. By 2030, China is expected to be importing almost five times as much coal as it does today. The IAEA estimates that the global use of coal will increase by 65 per cent by 2035. Even before you consider climate change, this is a disaster.

You do not have to be an enthusiast for atomic energy to see that it scarcely features as a health risk beside its rival. I wonder whether the nuclear panic may be a way of not seeing. Displacement is something we all do: Fixing on something small to avoid engaging with something big. Coal, on which industrialism was built and which over the past 200 years has come to seem central to our identity is an industry much bigger and nastier and more embedded than the one we have chosen to fear. I don't believe our choice is accidental.

Source: <http://gulfnews.com/>, 28 December 2013.

NUCLEAR STRATEGY

CHINA

China's Nuclear Bomber Can Hit US Military Bases

China's new nuclear bomber can launch strategic missile attacks against US military facilities and those of its allies in the Western Pacific, according to Chinese state media. H-6K strategic bombers have already been deployed with the 8th and 10th air divisions of the PLAAF, Watch China Times reported. The strategic bomber can attack the Japanese mainland with CJ-10 cruise missiles without even leaving Chinese airspace.

With a range of between 1,500 and 2,000 kilometers, the CJ-10 meets the requirements of the PLA Air Force to target US military bases and those of its allies in the Western Pacific, according to the report.

The report notes that "the long-range cruise missile has become a crucial part of China's nuclear arsenal." An H-6K would be able to take off from the air base of the PLA's 10th air division in Anqing, Anhui province and "strike at all US military bases in South Korea." In November 2013,

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Chinese media released a map showing the locations of major US cities and how they would be impacted by a nuclear attack launched from China's strategic submarine force.

In addition, major cities in India, Russian, Vietnam, Malaysia and the Philippines are within the range of the Chinese nuclear bomber. The US is gravely concerned about China's new long-range nuclear bomber. The US-China Economic and Security Review Commission warned in its annual report in November 2013 that China is "rapidly expanding and diversifying" its ability to strike US bases, ships and aircraft throughout the Pacific, even places like Guam

that were previously out of reach.

Source: <http://english.farsnews.com/>, 28 December 2013.

INDIA

India Successfully Test Fires Nuclear Capable Missile

India has successfully test launched a nuclear capable ballistic missile, Prithvi II, in the eastern state of Odisha, the Ministry of Defence stated... The ministry said the ballistic missile was launched from the test range at Chandipur, off the Odisha Coast, adding, the launch was flawless and achieved all its targeting and technical parameters set out for the exercise. "The launch was conducted as a culmination to a strategic training exercise. The aim of this exercise was to validate our readiness by undertaking launches in various contingencies," India's elite Strategic Force Command stated. The ministry said Prithvi missile is being indigenously produced and is equipped with improved high accuracy navigation and manoeuvring system. The battlefield Prithvi-II missile can travel 250 to 350 km and can carry a nuclear warhead weighing 500 to 1,000 kg. It has a flight duration of 483 seconds and a peak altitude of 43.5 km. Other than that, the missile has features to deceive anti-ballistic missiles and

uses an advanced inertial guidance system with manoeuvring capabilities...

Source: <http://www.kuna.net.kw/>, 07 January 2014.

INDIA - PAKISTAN

Exchange of List of Nuclear Installations Between India and Pakistan

India and Pakistan on 01 January 2014 exchanged, through diplomatic channels simultaneously at New Delhi and Islamabad, the list of nuclear installations and facilities covered under the Agreement on the Prohibition of Attack against Nuclear installations between India and Pakistan. The agreement, which was signed on 31 December, 1988 and entered into force on 27 January 1991, provides, inter alia, that the two countries inform each other of nuclear installations and facilities to be covered under the Agreement on the first of January of every calendar year. This is the twenty third consecutive exchange of such lists between the two countries, the first one having taken place on 01 January, 1992.

Source: <http://www.security-risks.com/>, 01 January 2014.

In 2014 the modernization of the automatic security systems at five facilities of the Russian strategic rocket forces will involve for the first time the Russian Defense Ministry's 12th main department responsible for maintaining, developing and servicing the Russian forces' nuclear arsenal and for controlling nuclear tests of other countries.

RUSSIA

Russian Strategic Rocket Forces to Modernize Security Systems in 2014

In 2014 the modernization of the automatic security systems at five facilities of the Russian strategic rocket forces will involve for the first time the Russian Defense Ministry's 12th main department responsible for maintaining, developing and servicing the Russian forces' nuclear arsenal and for controlling nuclear tests of other countries.

'In 2013 these works were held at eight facilities of the Russian strategic rocket forces. The modernization of the automatic security systems includes changing technical means of detection, alert and protection. The works in this direction will continue,' representative of the Russian Defense Ministry's press service and information department for the Russian strategic rocket forces, Col. Igor Yegorov, told Interfax...

The forces being re-equipped with the Yar rocket complex are supplied with the latest automatic security systems 'including a number of modern means increasing the reliability and readiness for

target use in any conditions,' Yegorov said. Nuclear facilities of the Russian strategic rocket forces are currently guarded with the use of six various types of automatic security systems, Yegorov said.

The majority of them have already been modernized and include means upon the new element basis, he said. Works to improve the systems of physical protection of the Russian strategic rocket forces facilities are held solely by military experts and involve Russian organizations, he said.

'The equipment being installed is developed and produced solely at Russian enterprises of the military industrial complex. It is ensured during the works being held that the information on the configuration of security complexes being installed, the

operation principles and algorithms of their functioning is utterly closed,' Yegorov said.

...'The Russian strategic rocket forces was and is taking organizational and technical measures in order to exclude such cases,' he said. This work is held in the framework of the automatic security system modernization program until 2015 approved by Russian strategic rocket forces Commander Gem. Col. Sergei Karakayev, Yegorov said.

Source: <http://www.globalsecurity.org/>, 06 January 2014.

USA

US to Start Cutting Submarine Missile-Launchers Next Year

Beginning in 2015, launch tubes in Ohio-class vessels will be reduced to 20 each, in accordance with New START requirements. The Navy's nuclear-armed ballistic submarine USS Maine conducts surface navigational operations about 50 miles south of Puerto Rico in this undated photo. Beginning in 2015, launch tubes in Ohio-class vessels will be reduced to 20 each, in accordance with New START requirements. The US next year is slated to begin reducing launch tubes on each of its Ohio-class ballistic missile submarines, a new independent report states.

The elimination of four operational launch tubes on each of the 14 submarines that make up the Navy's Ohio submarine fleet will be the first substantial reduction in US strategic weapon delivery capability since the 2011 New START accord went into effect, according to Hans Kristensen, who co-authored an assessment on the current status of U.S. nuclear forces. The report was published in the January/February (2014) edition of the Bulletin of the Atomic Scientists.

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Nearly three years after the New START pact with Russia entered into force, implementation of the treaty has "been going very slowly," Kristensen said in a brief Monday phone interview.

..."The way that the U.S. military has approached implementation of the New START treaty so far has not done anything that has actually affected the actual number of nuclear [delivery vehicles] that are in the war plan," said Kristensen, who directs the Nuclear Information Project at the Federation of American Scientists. Instead, the Pentagon has focused on reducing the nuclear-delivery capability of selected vehicles, such as heavy bombers, that have already been retired, he said.

The Defense Department has the latitude to pursue that approach because the treaty allows so many years -seven, specifically - before each side must carry out all mandated reductions, Kristensen said.

Once all of the Ohio-class submarines have had their launch tubes capped at 20 each — a project that is to take place in the 2015-to-2016 time frame — the United States will be able to deploy no more than 240 submarine-launched ballistic missiles at any time, according to the report written by Kristensen and Robert Norris, who is also with the Federation of American Scientists.

The submarine set to replace aging Ohio-class vessels — dubbed "SSBN(X)" — is expected to have only 16 missile tubes, which will reduce further the

number of sea-launched ballistic missiles that the United States can deploy. The replacement fleet is also envisioned to be smaller — only 12 submarines instead of the current 14. The Navy is not expected to begin building the first boat before 2021, and could

field the vessel a decade later, according to the Bulletin report.

Source: <http://www.nti.org/>, 06 January 2014.

BALLISTIC MISSILE DEFENCE

ISRAEL

Israel Moves Closer To Anti-Missile Shield With Arrow 3 Test

Israel's latest test-firing of its high-altitude Arrow 3 anti-ballistic missile system marks a major step toward the Jewish state's plan to build a multilayer missile defense shield against everything from Iranian intermediate-range ballistic weapons to home-made rockets built by Palestinian militants.

The Arrow, under development by state-run Israel Aerospace Industries and the Boeing Co. of the US, will be Israel's primary defense against ballistic missiles when it's declared operational. That's currently expected to be some time in 2015. The system's upgraded missile underwent its second flight test Friday over the eastern Mediterranean although it did not involve an interception, officials reported.

The test took place at the Palmachim air force base on the coast south of Tel Aviv. The two-stage Arrow reached its operational altitude outside Earth's atmosphere where it is designed to shoot down ballistic missiles high enough to

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disintegrate chemical, biological or nuclear warheads. Yair Ramati, head of the Israel Missile Defense Organization, said the test, which was attended by US officials, involved the solid-fuel exo-atmosphere interceptor jettisoning its booster rocket. "The kill vehicle continued to fly in space and conducted various maneuvers ... for a couple of minutes" using thrust vectors, Ramati reported. The interceptors do not carry explosives, but destroy

their targets by ramming them at closing speeds of thousands of feet per second and vaporizing them.

The Arrow 3 system will constitute the topmost tier of the planned Homa Hebrew for The Wall — defense shield and will be dedicated to intercepting ballistic missiles held by Iran, the embattled Syrian regime of President Bashar Assad, and, increasingly, Hezbollah in Lebanon...

Shipments already in Lebanon are believed to include several supersonic P-800 Yakhont anti-ship missiles. Seventy-two of these weapons were delivered to Syria in 2012-13. The Yakhont, considered the most advanced missile of its type in the world, "represents a new type of threat,"...

...Arrow 3, which underwent its first flight test 25 February 2012, is the latest variant of the system IAI, flagship of Israel's defense industry, which has been developing it with the Americans since 1988 at a cost well in excess of \$1 billion. Arrow 1 was first deployed in 2000. Arrow 2, with at least two batteries operational, will back up Arrow 3 at lower altitudes when the new variant becomes operational, picking off any ballistic missiles that get through the first line of defense in space.

The next tier down in the missile shield is the David's Sling system defense under development by Rafael Advanced Defense Systems and the US Raytheon Co. to counter medium-range missiles and rockets. The bottom layer is Rafael's upgraded Iron Dome system, primarily designed to intercept short-range rockets. It was deployed in early 2012 and the Israeli military boasts it has destroyed 84.6 percent of the targets it engaged in clashes with Palestinian militants.

That claim has been questioned by some Israeli missile experts, who say it has been highly inflated to boost the morale of Israelis who have been repeatedly warned they face the prospects of sustained weeks-long missile bombardment by their adversaries if a new war breaks out...

Source: <http://www.upi.com/>, 06 January 2014.

NUCLEAR ENERGY

INDIA

Indian Research Centre Takes Shape

The centre being built near Bahadurgarh in Haryana state will strengthen India's cooperation with the international community. It will house five schools

to conduct research into advanced nuclear energy systems, nuclear security, radiological safety, as well as applications for radioisotopes and radiation technologies.

Training facilities are to include virtual reality laboratories and a radiation monitoring, calibration and accreditation laboratory. The GCNEP will be used for research by Indian and visiting international scientists; training of Indian and international participants; international seminars and group discussions by experts on topical issues; and, development and conduct of courses in association with interested countries and the IAEA. Indian PM Singh...said that India aims to continue strengthening the security of its nuclear power plants and nuclear materials. This, together with the development of human resources in the field of nuclear energy, will be an important objective of the GCNEP, he said.

...He noted that the centre will be boosted by bringing together Indian and international scientists for their research and training programs. "To accomplish these aims, we have the IAEA and Russia, while working together with countries such as France and the USA."

The Indian government announced in September 2010 that it had approved the establishment of the GCNEP. It will be the sixth R&D unit under the aegis of the Department of Atomic Energy. In June 2011, Russia signed an agreement with India to cooperate on establishing four of the GCNEP schools. "India is one of the few countries in the world which has developed technology to detect nuclear power plants and has also acquired the ability to produce nuclear fuel," Singh noted. "Our goal is to build 27,000 MWe of nuclear power generating capacity within the next ten years."

Source: *World Nuclear News*, 03 January 2014.

PAKISTAN

Containment Dome Placed at Reactor in Pakistan as New Plants Proposed

Roughly two years after construction began, Pakistan's newest reactor at Chashma is taking shape. Crews placed the 180-metric-ton containment dome on unit 4 at the plant in Punjab Province. The News, an English language paper based in Karachi, said the placement was witnessed by Pakistani dignitaries, as well as the ambassador

of China, which is providing funding and technology for Pakistan's nuclear power program. Officials also announced their intention to study additional sites for new reactors.

Chashma 4 is a 315 megawatt, net, CNP-300 pressurized water reactor...according to the World Nuclear Association. The units are expected to enter service in 2016 and 2017, and discussions have taken place with the Chinese for a fifth unit at the plant. Elsewhere in the country, first nuclear concrete is expected to be poured this year for two ACP-1000 units at the Karachi Coastal Power Station. Additionally, Pakistani media reported last week the country's planning authorities will soon consider purchasing land in Muzaffargarh and Ahmadpur East, also in Punjab, for additional multi-unit plants...

Source: <http://nuclearstreet.com/>, 06 January 2014.

Pakistan Has Planned 7 Nuclear Plants for 8900 MW of Electricity By 2030

Pakistan on 02 January 2014 announced its plan to set up seven functional nuclear plants of 1100 MW each by 2030. The government is set to install 325 MW Chashma-4 (C-4) plant. Pakistan took this decision to combat the problem of shortage of power supply in the country. Nuclear power was set to become a major player in the country's power sector. As per the Pakistan government, by 2030 the Pakistan Atomic Energy Commission (PAEC) will be operating four nuclear power plants of 325 to 340 MW and seven nuclear power plants with the capacity of 1100 MW each, in addition to four units of 300 MW, producing a total of 8,900 MW of electricity.

The power generated through C-3 and C-4 (650 MW) will be linked to national grid by 2016. Pakistan would install more nuclear power plants to generate 42000 MW of electricity under its Vision 2050. China has committed 6.5 billion dollar finance for the construction of a major nuclear power project in the port city of Karachi.

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China National Nuclear Cooperation (CNNC) has promised to grant a loan of at least 6.5 billion dollar to finance the project, which will have two reactors with a capacity of 1,100 megawatts each...China has already helped supply two nuclear reactors at the Chashma nuclear power complex in Punjab, while another two are also under construction with Chinese assistance.

Source: <http://www.jagranjosh.com/>, 03 January 2014

SOUTH AFRICA

How Another Emerging Nation is Going Nuclear

Rosatom, Russia's state-owned nuclear power company, just signed a memorandum of understanding with South Africa to provide end-to-end nuclear plant delivery and operation. South Africa's Integrated Resource Plan calls for 9.6 Gigawatts of nuclear power by 2035. It plans to deliver that capacity through three nuclear plants.

Russian President Putin and South African President Zuma had agreed in March to partner on a portfolio of power investments, especially nuclear. They met at the 5th BRICS Summit in Durban, South Africa last March. South Africa is the smallest of the BRICS partners, led by Russia, China, India, and Brazil. South Africa supplies just 5% of its 18 GW capacity through two nuclear power plants operated by state-owned electricity utility Eskom. South Africa plans to add 9.6 GW of capacity by 2030-2035, with power to start-up by 2023. Eskom coal plants generate most of the power in the northeastern section of the country. Many of these plants are retiring through 2020.

Post-Fukushima nuclear power

...The world initially went anti-nuclear with the Greens of Germany leading the way. Germany declared it would eliminate its nuclear fleet by 2022. Pre-Fukushima, nuclear power accounts for 25% of the 163 GW generated in Germany. By 2013 nuclear

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power accounted for just 18%. New coal and natural gas fired plants, along with renewable energy sources, are taking up the slack amid greenhouse gas emission targets in a policy called the Energiewende, or "energy transition." Much of this policy will require even greater reliance on Russian crude oil and natural gas. Siemens built all of Germany's nuclear fleet of 17 units. The last unit was commissioned in 1989. The fleet has since been reduced to nine reactors producing 12 GW of capacity. E.ON and RWE run most of the remaining nuclear plants.

With Germany out of the picture, in the EU only Italy has voted nuclear out. All other EU countries are stepping up their plans for nuclear power plant development, albeit under even stricter safety guidelines. Japan is reducing its dependency on nuclear power by over 50%. In 2011 Japan's electricity capacity of was split evenly among nuclear, hydro, coal/oil, and combustible gas. After Fukushima, with mounting dependence on foreign fossil fuels, and the win by the Liberal Democratic Party, nuclear is back in the electricity portfolio.

The German reduction in its nuclear fleet accounts for about 5% of global uranium oxide supply. Startups and new plants in France alone over the next three years will be enough to soak up the excess supply.

Vying for contracts to build nuclear power plants in South Africa are Areva and Rosatom. Early in 2011 Areva stepped up its involvement with the Nuclear Energy Corporation of South Africa, NECSA. Rosatom just registered a marketing office in Johannesburg.

Areva built the two pressurized water reactors at Eskom's Koeberg site. They produce 5%-6% of South Africa's total power requirements. LESEDI Nuclear Services, in which Areva has a 51% share, provides construction, operation and maintenance support and services to Eskom and AREVA. Requests for bids are expected in early 2014. The contractor will be expected on-site building in 2016. Over 9.6 GW of new capacity will be on-line by 2023. Up to 40% local fuel and construction content is expected as well.

The company that can deliver \$5,800 per kilowatt installed capacity on time will probably win. Influencing Eskom's assessment of that probability will be French and Russian government guarantees and other material support....

Source: <http://www.dailyfinance.com/>, 30 December 2013.

UK

UK Regulators Begin Next Phase of Hitachi ABWR Assessment

The UK's joint nuclear regulators have announced that they are progressing to the next phase of their assessment of a new nuclear reactor design that could be built at two sites in the UK. The Office for Nuclear Regulation and the Environment Agency said in a statement they have begun assessing Hitachi-GE Nuclear Energy's UK Advanced Boiling Water Reactor (UK ABWR), which Horizon Nuclear Power, a subsidiary of Hitachi, is planning to use at two nuclear sites, Wylfa in north Wales and Oldbury in Gloucestershire.

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The assessment follows nine months of preparatory work by Hitachi-GE Nuclear Energy and the regulators, the statement said...According to statement, the process is likely to take around four years...The regulators said they have been working with Hitachi-GE to make sure the company understands the UK regulatory system and the regulators' expectations. The regulators have also been increasing their knowledge of Hitachi-GE's proposals...Horizon Nuclear Power was formed in 2009 to develop new nuclear power stations in the UK. It was acquired by Hitachi in November 2012.

Source: <http://www.nucnet.org/>, 06 January 2014.

NUCLEAR COOPERATION

JAPAN- INDIA

Japanese Coalition Party Leader for Nuclear Cooperation with India

A key ally of Japan's ruling coalition on 06 January 2014 announced support to the India-Japan nuclear cooperation talks, saying they should be "accelerated". Natsuo Yamaguchi, chief of Japan's

New Komeito Party, a junior partner of the Liberal Democratic Party-led ruling coalition, said here that there should be a “flexible approach” to the issue of nuclear cooperation.

“We are part of the ruling coalition.. we have no major difference of opinion on the subject.. (of India-Japan nuclear cooperation.) The talks should be accelerated,” Yamaguchi told journalists here ahead of the visit of Japanese PM Abe to India later this month. Yamaguchi, whose Komeito Party is for phasing out of all nuclear reactors in Japan in the wake of the Fukushima disaster and earlier the Hiroshima bombing, said there were two-three aspects of nuclear tech cooperation - nuclear non proliferation, CTBT and safe disposal of nuclear waste. “These are areas of concern... but we must remain realistic.. cooperation is possible, we must have a flexible approach,” he said.

Source: <http://www.business-standard.com/>, 06 January 2014.

NUCLEAR NON PROLIFERATION

IRAN

Iran Nuclear Talks Paving the Way for a Final Deal

Iranian and European negotiators have found solutions to “all” their disagreements over how to implement the Geneva nuclear deal, Iran's deputy chief negotiator has said, in a move that could pave the way for a final deal to contain Tehran's nuclear programme.

...An EU spokesman said “very good” progress was made “on all the pertinent issues”, but added that results of the talks — involving Mr Araqchi and Helga Schmid, deputy to Baroness Ashton, the EU foreign policy chief — still had to be validated by more senior officials. US State Department spokesman Jen Psaki said technical talks were making good progress but reports that a deal had been finalised were inaccurate. Any agreement needs to be signed off by Britain, China, France, Russia, the US and Germany.

And fears among sceptics that Iran was outflanking the world powers deepened with a report from Reuters that Iran and Russia were broking an oil-for-goods swap worth \$1.5bn (€1.1bn) a month that would let Iran lift oil exports substantially, in defiance of sanctions. The report, if confirmed, would undermine US and UK claims that the

sanctions relief granted to Iran was “limited and targeted”, and could see Russia unilaterally draining negotiating leverage from the US and the EU.

Source: Peter Foster, <http://www.independent.ie/>, 11 January 2014.

US Sanctions Bill, Iran Nuclear Talks “Insurance Policy” - Senator

A Democratic US senator leading the charge to pass new sanctions on Iran despite objections from the Obama administration said the measure is a “diplomatic insurance policy” to push Tehran to comply with agreements to curtail its nuclear program.

Fifty-nine senators 16 of them Democrats of the 100 in the chamber were co-sponsoring the bill, despite the White House's insistence that it could imperil delicate international negotiations with the Islamic Republic. Senator Robert Menendez, the chairman of the Senate Foreign Relations Committee, disputed that in an op-ed published in The Washington Post, saying the bill would bolster diplomacy, not threaten it.

...“It allows all sides to negotiate in certainties and provides one year of space for the parties to continue talking. It spells out precisely the consequences should the agreement fail. This should motivate Iranians to negotiate honestly and seriously,” he said. Menendez is the main sponsor of the “Nuclear Free Iran Weapon Act,” which would impose new sanctions on Tehran if it breaks an agreement to curb its nuclear program. The White House has threatened a veto, and Iran has said an interim nuclear agreement would be dead if Congress imposes new sanctions.

The bill would also place sanctions on Iran if it does not agree to a comprehensive deal later this year or next. The US and five other world powers agreed to a six-month interim deal with Iran in Geneva in November 2013 that can be extended to a year.

White House spokesman Jay Carney said the administration still feels the proposed bill would be harmful. “It could, if they were to do it, actually weaken the sanctions structure that's in place by undermining faith among our international partners and providing Iran the opportunity to say that we have been negotiating in bad faith,” Carney said at a daily news briefing.

The 59 co-sponsors mean the bill is near the 60 votes needed to pass most legislation in the Senate and the 67 necessary to overcome a presidential veto. But there has been no indication from Democrat Harry Reid, the Senate Majority Leader, on when it would come to the floor for a vote. Separately, US Representative Eliot Engel said he was “deeply troubled” about a report that Russia is negotiating an oil-for-goods swap with Iran, saying it raises questions about Moscow’s commitment to the negotiations to end Iran’s pursuit of nuclear weapons.

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Reuters reported on Friday that the deal being negotiated is worth \$1.5 billion a month, and would let Iran raise its oil exports by up to 500,000 barrels per day. US and European sanctions on Iran’s disputed nuclear program have combined to cut Iran’s oil exports by about 1 million bpd.

Source: Patricia Zengerle and Timothy Gardner , <http://in.reuters.com/>, 11 January 2013.

NUCLEAR SAFETY

INDIA

Kudankulam Nuclear Plant Has Foolproof Safety Systems: Russian Developer

The Kudankulam nuclear power plant in Tamil Nadu, whose first 1,000 MW unit is currently in the testing stage, is equipped with state-of-the-art safety mechanisms with unique features that make them foolproof, its Russian developer says, addressing current concerns on nuclear safety issues.

Denis Kolchinskiy, chief project engineer of SPbAEP, the developers of the AES 92 nuclear reactor installed at Kudankulam, said modern Russian designs have an optimised balance of active and passive safety systems that have been developed over a decade. “Now we implement such projects in Russia and offer them our foreign partners,” Kolchinskiy told IANS in an email interview.

According to Kolchinskiy, the Kudankulam plant is built with “active” and “passive” safety systems to

Kudankulam plant is built with “active” and “passive” safety systems to provide two layers of protection. While the active layer requires an electrical actuator, or starter, the passive one uses natural force, like that of gravity.

provide two layers of protection. While the active layer requires an electrical actuator, or starter, the passive one uses natural force, like that of gravity. Spurred by Japan’s Fukushima disaster, activists of the People’s Movement Against Nuclear Energy (PMANE) have been holding protests against the Kudankulam plant, citing safety and environment concerns. The Supreme Court had last year rejected a plea against the project but asked the government to put in place stringent security measures.

The key to preventing an apocalypse in the event of a core meltdown, said Kolchinskiy, is the “molten-core catcher” - a mandatory safety system

included in the Kudankulam project’s basic supply package. To remove heat from the reactor core which contains nuclear fuel, it is necessary to supply water by means of pumps. Should the reactor fail to be cooled down for some reason, the fuel inside would not melt down. “The molten core would go to the ‘catcher’, which would ensure its cooling down and prevent release of hydrogen,” Kolchinsky said.

“When the molten matter gets into the ‘catcher’, an endothermic reaction (reaction with thermal energy absorption) begins, which results in solidification of the melt. Besides, the material contains dysprosium, which absorbs neutrons, and this excludes the possibility of a chain reaction,” the Russian engineer said.

In the Fukushima disaster, the impact of a tsunami wave damaged the nuclear plant’s diesel generators and interrupted power supply to pumps. With the pumps shut down, heat removal discontinued, leading to a core meltdown. “If such a system had

been at Fukushima, no one would have ever known what Fukushima is,” Kolchinskiy maintained. Russia’s concerns over the operator’s responsibility in India’s nuclear liability law have stalled agreement on Unit 3 and 4 of the Kudankulam project. “The passive emergency protection system turns on without electricity and begins cooling by heat to heat exchanges owing to thrust. It directs heat to

the atmosphere for an unlimited period of time," the Russian engineer said.

He explained that there is a vessel with water, while steam goes up by a pipe, condensates and returns to the steam generator so as to establish natural circulation. "For the passive system to remove heat, no electricity is needed, no action by the personnel. As soon as temperature increases in the primary circuit, the system starts removing heat automatically," Kolchinskiy said.

"The reactor is designed so that the passive and active safety systems prevent the core from melting down. However, in the event of a hypothetical accident, our reactor provides for a special device, the molten-core catcher," he added. The only other Generation III+ units with double-wall containment, combination of passive and active systems, and a "molten-core catcher" in the world in actual operation are the 1st and 2nd units of the Tianwan nuclear plant in China, Kolchinskiy said...

Pointing out that nuclear power is "most harmless", sans hazardous emissions into the environment, Kolchinskiy said construction at Kudankulam "was preceded by landscaping the surrounding areas, as a result of which all necessary conditions were created for birds, the pond in which they fish and trees where birds build nests."

Source: <http://www.dnaindia.com/>, 06 January 2014.

India Ranks Below Pakistan in N-Security Index

India has been ranked below its two nuclear-armed neighbours Pakistan and China in the list of countries with a weak nuclear material security in the world, according to a US-based think-tank. In the 2014 Nuclear Threat Initiative's Nuclear Materials Security Index released, India has been ranked 23rd out of 25 countries with weapons-usable nuclear materials.

India received 41 out of 100 points, which is improvement by one point from the 2012 score. For comparison, China received 64 points and has been ranked at 20th spot, while Pakistan with 46 points stands at 22nd place. India and these countries are included in the list of 25 countries with one kilogram or more of these materials, which also includes all other nuclear-armed states.

The NTI said this improvement reflects India's first contribution to the IAEA Nuclear Security Fund. "Overall, however, India's score remains low". This is due to a number of factors, including weak regulations that are written as guidance rather than as requirements; increasing quantities of weapons-usable nuclear materials for both civilian and military use and gaps in its regulatory structure such as a lack of an independent regulatory agency.

External risk factors, such as high levels of corruption, which undermine confidence in implementation or enforcement of security measures and also increase the risk that officials may contribute (even unwittingly) to the theft of nuclear material are also among the factors, it added. Both India and China improved their scores since 2012 by one point by contributing to the IAEA Nuclear Security Fund, which supports the implementation of nuclear security activities, the report said.

In comparing both countries, India scored higher than China on the implementation of UN Security Council Resolution 1540 related to nuclear security issues. China, however, scored higher in a number of areas, including: the existence of an independent regulatory agency; having invited a peer review of its nuclear security arrangements; and having strong regulations for control and accounting of materials. Pakistan received 46 out of 100 possible points compared to India's 41, the report said, adding that both countries improved their scores since 2012.

Pakistan improved its score by publishing new regulations for the physical protection of nuclear facilities. In comparing both countries, India scored higher than Pakistan on international legal commitments because India has adopted all of the relevant treaties whereas Pakistan has not. Pakistan, however, scored higher in a number of areas, including: the existence of an independent regulatory agency; having invited peer review of its nuclear security arrangements; and having security and other personnel with access to nuclear materials subjected to additional vetting.

In addition, Pakistan has an operational Center of Excellence (COE), whereas the foundation stone for India's COE, the Global Center for Nuclear Energy Partnership, was laid on 03 January 2014, it said. In its report, NTI said India was briefed on the Index, along with other countries. "Unfortunately, India did

not use the opportunity to review and confirm the data, a process through which governments can choose to provide responses to one, some, or all questions depending on their sensitivities and help ensure the accuracy of the data," it said. "Out of the 25 countries with weapons usable nuclear materials, 17 (more than two-thirds) responded to the data review and confirmation request (including nuclear-weapons states such as France, the U.K., and the US)," the report said.

NTI said India scored at the top for international legal commitments, having signed and ratified the Convention on the Physical Protection of Nuclear Materials and its 2005 Amendment, as well as the International Convention for the Suppression of Acts of Nuclear Terrorism. India also received the highest possible score for implementation of UNSCR 1540.

NTI recommended that India's nuclear materials security conditions could be improved by strengthening its laws and regulations for mitigating the insider threat, for the control and accounting of nuclear materials, and for the physical security of materials during transport.

...India's nuclear materials security conditions could also be improved by completing the establishment of an independent nuclear regulatory agency, in fulfilment of a commitment made at the 2012 Nuclear Security Summit, it said.

Establishing and maintaining a regulatory agency that is independent of influence from those being regulated is necessary to ensure meaningful and unbiased oversight. The importance of an independent regulatory agency has been highlighted in a recent Indian parliamentary panel report.

Source: *The Hindu*, 10 January 2014.

JAPAN

Fukushima-Daiichi Unit 1 Accident Was Not Due To Coolant Loss, Says Tepco

The problems that led to core meltdown and fuel damage at Unit 1 of the Fukushima-Daiichi nuclear plant began as a direct result of the impact of the

tsunami and not a loss of coolant from pipe failure caused by the earthquake, a report by plant operator Tokyo...

The Fukushima Nuclear Accident Independent Investigation Commission of Japan's Diet (parliament) had raised the possibility that the accident may have been the result of a loss of coolant because of earthquake-induced component damage and not the result of a loss of emergency power because of the tsunami, Tepco said in a statement. If correct, this assumption would have contradicted the prevailing understanding that the facility had weathered the 9.0 magnitude earthquake, an important consideration for future designs incorporating seismic safety principles.

But the new report says Unit 1 survived the earthquake intact. Data recorded by wave metre records and other instruments, along with photographic sequences of the incoming tsunami, make it clear that the loss of emergency diesel generator power caused by the tsunami, and the resulting failure of the cooling systems, caused the accident, Tepco said.

Tepco said the report was less conclusive on why water injected into Units 1, 2 and 3 from fire trucks in the immediate aftermath of the tsunami when cooling systems had failed was insufficient to cool the reactor cores and prevent meltdown. It is possible, the report says, that the water found its way into other systems and failed to reach the core. Because of this, an investigation into the actual amount of water injected into the unit and its impact on the progress of the accident will be "a focus of continued study".

The new report is the first progress report on Tepco's continuing investigation into the causes of the crippling of three of the facility's reactor units after the earthquake and subsequent tsunami of March 2011.

Units 1, 2 and 3 at the six-unit plant were in commercial operation at the time of the earthquake and tsunami and all suffered reactor core, fuel and containment damage. The other three units did not

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suffer fuel damage. Unit 4 was offline and was not loaded with fuel, but the reactor building was severely damaged by a hydrogen explosion. Units 5 and 6 were offline, but were still fuelled.

Source: <http://www.nucnet.org/>, 02 January 2014.

Nuclear Expert: Why Steam From Reactor 3 at Fukushima Matters?

In September of 2013, steam was observed coming from Reactor 3. The average temperature in Fukushima was 30 degrees Celsius (86 degrees Fahrenheit) during the daytime high. Gordon Edwards, president of the Canadian Coalition for Nuclear Responsibility (CCNR) spoke about the steam and warned that it could be indicative of an under-reported problem.

Mehran Keshe, a nuclear scientist and founder of the Keshe Foundation, explained that TEPCO is not listening to scientists from all over the world, who agree that Fukushima is responsible for the poisoning of Japanese citizens through contact with radioactive, carcinogenic elements. A few months ago TEPCO admitted they do not know why the steam began emanating and, irresponsibly, told the public that it was just a "puddle sitting atop the reactor and it was not dangerous."

TEPCO reported that they have not recorded an increase of radioactivity, being released into the environment, from Reactor 3. Essentially a steady stream of radioactive material has been seeping into the environment, and the downplay of the potential severity of the situation continued. The Japanese government will soon be approving legislation that would make the leaking of information about Fukushima a state offense, carrying a hefty criminal sentence.

On 17 December 2013, TEPCO began to "remove fuel assemblies from the Reactor 3 Spent Fuel Pool, (and began with the) removal of large-size debris in the Spent Fuel Pool". Not long after TEPCO began this operation, steam once again began to emanate from Reactor 3. Since 24 December 2013, reports, directly from TEPCO's website, have confirmed that steam has been emanating from Reactor 3. The daytime high temperature during the 3 days in question was 6 degrees Celsius or 43 degrees Fahrenheit.

Over the course of 3 days, reports continued, claiming that no "abnormal plant conditions" have been identified at Reactor 3, where the steam has been observed via a camera. A recent commentary on the steam rising from Reactor 3, claims that

because it is currently winter in "much of the northern hemisphere" that the steam is simply "hot water vapor [being] released daily", from the devastated Fukushima nuclear plant.

Under normal conditions, with temperature differences between the environment and the nuclear plant, this explanation would make sense. Although the steam, rising from Reactor 3, is undeniably more visible during the winter months, it is certainly not just ordinary "hot water vapor" as some media outlets may suggest.

...The specific elements contained within the steam should be the focal point of discussion in terms of properly appreciating the potential consequences yet to manifest at Reactor 3. In 2011, at Reactor 3, the water in the reactor vessel evaporated. Fuel became uncovered, and heated up to a temperature of 2,300 degrees Celsius. It mixed with the materials of the structure to form magma called Corium.

The Corium flowed down to the bottom of the reactor vessel, which is made of steel. According to Japanese investigators, the Corium pierced the reactor vessel before falling on the concrete basement inside the containment.

Questions about how much erosion to the concrete has occurred because of the Corium still remain unanswered. The steam emanating from Reactor 3 is most assuredly radioactive. In fact, TEPCO lied at first about Corium melting through concrete and steel casings. The Institute of Applied Energy (IAE) pointed out that, at least in Reactor 1, the Corium did indeed melt through the barriers, causing the vessel to "tilt".

Reactor 3 could be showing signs that Corium may be the cause of a possible future disaster if the Corium comes into contact with radioactive water, causing a violent reaction such as a steam explosion. Harvey Wasserman, nuclear energy activist, explained, that during the 40 years he has been involved in activism, "no one ever talked about the possibility of multiple meltdowns, but that is what occurred at Fukushima."

One way of dealing with the cumulative effects of low-radiation exposure which has been proven to be useful is Zeolite. Because of its crystalline structure Zeolite, a natural mineral, acts like a magnet that attracts positively-charged particles and metals including radioactive metals. During the Chernobyl disaster, some "500,000 tons of Zeolite" were distributed in the most heavily exposed areas. Chinoptilolite Zeolite is highly effective in treating

persons exposed to even low levels of radiation because it is a naturally detoxing mineral. Triple water filtration systems are extremely effective in protecting against harmful radioactive isotopes found in public drinking water. TEPCO has been caught doctoring the readings and downplaying the impact of Fukushima by ordering workers at the cleanup sites "to shield their dosimeter with lead covers to make the integral dose look lower" than it actually is. Workers confirmed that "they covered the dosimeters with lead cases."

TEPCO also omitted leaks, resulting in radioactive water being dumped into the Pacific Ocean. In July of 2013, the Japanese Nuclear Regulation Authority (JNRA) finally told the press that the leaking of this deadly water from Fukushima had been occurring since the accident.

Source: <http://nsnbc.me>, 04 January 2014.

SOUTH KOREA

Korean Reactors Cleared For Restart

Three South Korean nuclear power reactors forced to stop operations in May 2013 after finding safety-related control cabling had falsified documentation have been given approval to restart. With the cabling having been replaced, Korea's Nuclear Safety and Security Commission (NSSC) has now given Korea Hydro and Nuclear Power (KHNP) approval to restart operations at Shin Kori units 1 and 2 and Shin Wolsong unit 1.

Korean authorities began an investigation into safety certificates for the cabling in April 2013 after a tip-off. The following month, the NSSC ordered the units to shut. In the event of an accident, the cables send signals from the reactor operating systems, such as cooling, to the control room. The newly-constructed Shin Wolsong 2 is having its cabling replaced and still awaiting approval to start commercial operation for the first time.

The discovery of falsified quality documentation for the cabling was said to be unrelated to the similar case announced in November 2012 in which KHNP had allegedly been supplied with falsely-certified non-safety-critical parts for at least five of the country's 23 power reactors. The two most affected units, Yonggwang 5 and 6 (since renamed Hanbit 5 and 6), were taken off line for the parts to be replaced. The other affected units, Yonggwang

(Hanbit) 3 and 4 and Ulchin (now Hanul) 3, were able to continue in operation during replacement work...

Source: *World Nuclear News*, 02 January 2013.

NUCLEAR WASTE MANAGEMENT

EU

Funds on Condition for EU Decommissioning

More EU money will go to decommission nuclear reactors in Bulgaria, Slovakia and Lithuania, but the bloc's Council of Ministers has requested tighter project management. There are two new regulations, one to support the decommissioning in Lithuania, and the other supporting programmes in Bulgaria and Slovakia. They approved larger sums than initially proposed.

Some €293 million instead of €209 million will be set aside for helping decommission units 1 to 4 of the Kozloduy nuclear power plant in Bulgaria. The projects at Bohunice 1 and 2 in Slovakia will receive €225 million, compared with an originally proposed €115 million. In Lithuania work to decommission Ignalina 1 and 2 will receive €450 million, up from the proposed €229 million.

In total these add up to €968 million (\$1.31 billion), an increase of €415 million (\$564 million) on previous allocations, and go some way to bridge a €2.5 billion funding gap identified by the EU Court of Auditors in 2013. Another change is that EU support for decommissioning in Lithuania and Slovakia will continue for an extra three years

to 2020. The end date for the Bulgarian program was already set at 2020 under the initial proposal. All three new arrangements started on 01 January 2014.

A council memorandum asserted that the EU was right to help given that the closures had been pushed through during these countries' negotiations to join the EU: "Bulgaria, Lithuania and Slovakia undertook to close and subsequently decommission the abovementioned nuclear reactors. The EU has undertaken to assist those countries in addressing the exceptional financial burden imposed by the decommissioning process," it said.

The formal proposal for the spending added that the three member states "do not have the required financial resources" to complete the

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decommissioning: "Taking into account that the reactors were shut down before their initially foreseen end of design lifetime and that it takes about 25 years... of operation to accumulate sufficient funds for decommissioning, it was not possible for the three countries to set aside sufficient funds."

However, the regulations also specify a number of conditions which the three countries must meet to receive the funds, including compliance with the Euratom Treaty's rules on nuclear safety; establishing a financing plan identifying full costs and envisaged funding sources required for the safe decommissioning; and the submission to the Commission of a revised detailed decommissioning plan.

These conditions were included following a performance audit conducted by the EU's financial

watchdog European Court of Auditors in 2011. The proposal said that it had taken account of court recommendations, notably that full funding should not be guaranteed by the EU, that clear end-dates for EU support should be set, and that conditions for EU support were needed...

The Commission will now set out an annual work program for each decommissioning project specifying the objectives, expected results, related performance indicators and timeline for the use of funds, followed by a progress report at the end of each year. The regulation also says that a mid-term evaluation will be conducted by December 2017, as well as a final evaluation following the end-date.

Source: Jonathan Dyson, World Nuclear News, 03 January 2014.



Centre for Air Power Studies

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