Editorial

Imphal, Saturday June 24, 2017

Recreation- a Serious Business

The enigmatic cycle of our modern world has everyone in its grip- people devoting increasingly longer time and efforts in their work for higher financial returns which will be utilized for amassing more goods and services pushing up demands and subsequently the prices thus forcing people to work even harder to maintain their lifestyles and standards of living. This endless cycle of consumerism and capitalism needs to be slowed down before the mentality of the working public become so attuned to the singular objective of earning more to spend more, relegating all other social and personal activities and responsibilities as secondary considerations. Recreation- a word that conjures up images of whiling away one's time in seemingly mundane matters and activities- is the remedy for all the tensions and pressures the busy modern world is imposing on the society. It may take any form and is the surest way to recharge and refresh the mind, body and soul to meet new challenges. It releases the pent -up frustrations one experienced in our daily grinds and struggles and takes our minds away from everything that confines and hinders our life. This becomes more relevant in our society with the increasing number of educated and knowledgeable young energetic generation vying for the limited opportunities this troubled state has to offer. The increasing delays and indifferences, not to mention the disorderliness and hindrances one has to bear to get anything done leaves a negative impact on our mindset which starts to manifest in the general attitude of the public- the dour expressions and wary exchanges tinged with suspicion and distrust, and even the occasional physical violence. It will not be an exaggeration to point out that our society- especially the youths are being hemmed in from all sides thus making them feel emotionally suffocated, deprived of their liberties and their personal freedom infringed upon. On the one hand- social vigilantism that often borders on the fanatic and on the other hand, the armed forces treating everybody in the state with suspicion and distaste thereby distancing themselves from the people with each passing day, with the government not doing visibly enough to make things better for the common public. It is high time to take recreation seriously- not with a frown and gritted teeth, but with our heart and soul leaving all the worries and frustrations behind- to be able to live our childhood again- even if for a very brief moment and be truly free of all obligations and responsibilities and pursue that one thing that brings us real and undiluted happiness. It is only when the mind, soul and the body are purified that we can focus on building a better life and a contented and happy society consequently.

National News

Kashmiri youth fascinated by theatre

ANI

Srinagar, June 24: A number of young and educated Kashmiri youth are showing a keen interest to join theatre with the aim of becoming professional actors.

Theatre has been an important medium of communication for centuries and plays a crucial role in highlighting grievances that can be communicated to society.

Adil Ahmad, a young Kashmiri actor, has set a milestone for other Kashmiri youth. The instability in valley and various problems has not stopped him from chasing his dreams.

He is studying journalism from Kashmir University and has keen interest in theatre.

"Mass communication is a medium of conveying a message to people and theatre also plays the same role," said Adil.

He further said "I appeal to directors across India to come Kashmir and take the auditions of Kashmiri youth. Kashmir has plenty of talent."

Adil's dream is to become a theatre actor and for that he is working hard. He has performed many theatre plays and worked with renowned art of the valley.

Mushtaq Burki, famous theatre artist, said theatre was the only means of conveying problems to the king in the past.

The culture and tradition of Kashmir still survives in spite of various set back and trauma in the valley. The education sector in the valley has also seen a tremendous rise. The youth in Kashmir is moving ahead towards development.

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Pressurised Heavy Water Reactor

It will meet country's demand for Clean Energy in the immediate and the long-term future

By: Srikumar Banerjee (PIB)

Government's announcement for the plan of construction of ten new Pressurised Heavy Water Reactors (PHWR) of 700 MWe capacity vindicates the confidence in the indigenous PHWR technology which has been built over a period of nearly four decades. The performance of the present sixteen indigenously built PHWRs is demonstrated by an average capacity factor of about 80% over last five years, their uninterrupted operation over extended periods, the longest being 765 days for a Rajasthan Reactor, RAPS-5 securing the second world ranking and a very low average electricity tariff which is next to that of the hydroelectric power. More than anything else, is the fact that 100% of all their components are manufactured by the Indian industry. Dr. M.R.Srinivasan in a recent column in The Hindu (appeared on May 19,2017) has succinctly outlined the history of the development of the PHWR technology and the near-term strategy of the growth of nuclear power capacity. The evolution of the PHWR technology and the upgradation of their safety features have been covered in a series of scientific papers published in a special section of the April '17 Issue of "Nuclear Engineering and Radiation Science'- a journal published by American Society of Mechanical Engineers.

The PHWR technology in India started in the late nineteen sixties with the construction of the first 220 MWe reactor, Rajasthan Atomic Power Station, RAPS-1 with a design similar with that of the Douglas Point reactor in Canada under the joint Indo-Canadian nuclear co-operation. Canada supplied all main equipment for this first unit. India retained responsibility for construction, installation and commissioning activities. For the second unit (RAPS-2), import content was reduced considerably and indigenization was taken up for major pieces of equipment. Following the complete withdrawal of the Canadian support in 1974 after Pokhran-1, Indian nuclear engineers completed the construction and the plant was made operational with majority of the components made in India. From the third PHWR unit (Madras Atomic Power Station, MAPS-1) onwards, the evolution and indigenisation of the design began with the objective of keeping abreast with evolutionary changes taking place worldwide and of meeting new safety criteria. Improvements were also incorporated for reduction of the construction time and cost, and enhancing reliability of operation leading to better capacity factors. The first two units of PHWR using indigenously developed standardized 220 MWe design were set up at the Narora Atomic Power Station (NAPS). This standardized and optimised design had several new safety systems which have been incorporated in five more twin-unit atomic power stations with capacity of 2 x 220 MWe located at Kakrapar, Kaiga and Rawatbhata. For realising the economics of scale, the design of 540 MWe PHWR was developed and two such units were constructed at Tarapur. Further optimisations were carried out by utilising the excess thermal margins and improve the economics and NPCIL modified the 540 MWe PHWR design to that of 700 MWe capacity without much design changes. Four units of this design are being constructed at Rawatbhata and Kakrapar at present.

As far as the safety is concerned, the PHWR technology scores well in terms of its several inherent safety features. The biggest advantage of the PHWR design is the use of thin walled pressure tubes instead of large pressure vessels used in pressure vessel type reactors. This results in a distribution of pressure boundaries to large number of small diameter pressure tubes. The consequence of an accidental rupture of the pressure boundary in such a design will have a much less severity than that in a pressure vessel type reactor. The PHWR core is always uniquely surrounded by huge quantity of low temperature and low pressure water in the calandria vessel and in the calandria vault. These coolant inventories significantly delay the progression of the event and, thereby, provide adequate time for interventions and corrective actions by operators to mitigate the consequences. In fact, the large quantity of vault water can serve as a core catcher for in-vessel retention of disintegrated fuel debris in the case of a very low probability core melt accident. These inherent heat sinks are required only when the primary heat sink through steam generators or the shutdown cooling system becomes unavailable in the most severe accident scenario.

In addition, the Indian 700 MWe PHWR design has enhanced safety through dedicated Passive Decay Heat Removal System which has the capability of removing decay heat from core without requiring any operator actions similar with the technology adopted for Generation III+ plants to address the Fukushima type accident. The 700 MWe Indian PHWR has steel-lined containment to reduce the leakages and containment spray system to reduce the containment pressure in case of a loss of coolant accident and for scrubbing radio nuclides in case of their release beyond the design limit.

The main reasons for selecting PHWRs in the 1960s for the First Stage of the Indian nuclear power programme have been the use of natural uranium oxide as the fuel, the best utilisation of mined uranium in energy production and the prospect of establishing a completely self-reliant technology. Over four decades of relentless research, design and development work in Bhabha Atomic Research Centre and Nuclear Power Corporation and the matching contributions of some of their industry partners who had shown the courage in taking up the challenging manufacturing and construction work have enabled India in establishing the technology in totality. Mastering the entire fuel cycle including prospecting of minerals, mining, processing and manufacturing of fuel and structural materials, reprocessing of spent nuclear fuel and immobilization of radioactive waste has given India a unique position of self-reliance in the atomic energy domain. The constraint of a limited reserve of uranium in the country which earlier impeded a rapid growth in nuclear power has now been eased by augmented production of indigenous uranium and import of uranium under the civil nuclear co-operation agreements with several countries. During the last financial-year Nuclear Fuel Complex had a record production of nuclear fuel exceeding 1500 tonne and new uranium deposits discovered by Atomic Mineral Division for Exploration and research have taken the uranium reserve in the country to a level of 200000 tonne.

India is now poised for a rapid growth in the nuclear power capacity which is essential for meeting the demand of clean electricity. The per-capita electricity consumption in India (now close to 1000 KWh) is nearly one-third of the world average and there is an obvious need for a substantial enhancement of non-carbon electricity production to improve the quality of life of our people. The impressive growth in the solar and wind power has made a visible impact in increased availability of electricity in many areas. However, it needs to be emphasized that the distributed and intermittent sources of energy such as solar and wind cannot meet the base load demand very effectively. The nuclear energy source is concentrated, continuous and reliable and, therefore, can be complemented by solar and wind energy in meeting the overall demand of electricity with practically zero carbon foot-print. While the huge electricity demand from large cities and industrial complexes require uninterrupted and concentrated form of energy, there is an equally big demand of distributed energy in our rural areas. Energy planners are, therefore, combining these different patterns of energy requirement to achieve an optimised solution.

The next issue which needs to be addressed is the speed at which we can grow our nuclear power capacity. In this context one can examine the experience of France and USA in nineteen seventies and of China in the recent years. They all have achieved very impressive rapid growth by adopting a convoy or a serial mode of installation of nuclear power plants of a few standardised designs. In such a strategy, the industry can gear up their dedicated production lines for sophisticated nuclear components and construction companies can deploy their manpower and skill-set most effectively. The decision that 10 PHWRs of 700 MWe will be installed in the immediate future will generate enough enthusiasm in the industry for taking up the challenge of serial production of nuclear components of exacting specifications. The expansion in nuclear power activity will not only broaden the supplier base but also make the participating industry more quality conscious. They can even qualify to be exporters of nuclear grade components. A reduction in the gestation period of construction of nuclear plants will have a strong impact in reducing the cost of electricity.

As has been mentioned by Dr.Srinivasan, India is now in a position to embark upon building 900 MWe Pressurised Water Reactors (PWRs) of her own design. The capability of making large size pressure vessel is now available within the country and our own isotope enrichment plants will be able to supply a part of the required enriched uranium fuel within a decade. These will be in addition to imported PWRs from Russia, France and USA with the aim of an accelerated growth of nuclear energy in the country. The signing of the recent agreement between India and Russia for the construction of two more 1000 MWe PWRs (Units 5 and 6) in Kudankulam confirms this overall plan. The convenience of operation and a high average capacity factor have made PWRs the most sought after nuclear power reactors in the world, nearly 85% of all power reactors being the PWR type. There will be a special advantage of operating a mix of PWRs and PHWRs in India as the spent fuel of the former which will contain more than 1% of uranium-235 can be reprocessed and further utilized as the fuel in PHWRs operating in tandem. This evolving fuel cycle will eventually extend the power generation from the First Stage of the well- known three stage programme quite significantly.

The merit of the closed fuel cycle which has been adopted right from the beginning of the Indian programme is not only in multiplying the fuel resource but also in reducing the radio-active burden of the nuclear waste dramatically. In this context, the successful development of separation of minor actinides from the nuclear waste in India, deployed in pilot plant scale, has drawn world-wide attention. Plutonium recovered by reprocessing of spent fuel from operating PHWRs has been used in making the plutonium-uranium mixed oxide fuel for the full core of the Prototype Fast Breeder Reactor (PFBR) which has initiated the commissioning activities before commencing operation. With the entry of India in her Second Stage of nuclear power programme in which Fast Breeder Reactors will not only enable the growth of the installed nuclear capacity, but also generate more fissile materials, plutonium-239 and uranium-233 by conversion of fertile isotopes, uranium-238 and thorium-232 respectively. An enhanced scope and an accelerated implementation of the First Stage of the programme will make a far-reaching impact on securing the energy self-reliance of the country. By operating multiple recycles in the uranium-plutonium fuel cycle the supply of fissile material is expected to be enhanced by a factor of 60 and by using the huge reserve of thorium, the current estimate being four times that of uranium, India can sustain the supply of clean nuclear energy for several centuries.

(The writer is a former Chairman AEC & Secretary DAE. Currently he is Homi Bhabha Chair Professor, DAE; Chancellor, Homi Bhabha National Institute (HBNI) and Chancellor Kashmir University)

National and International News

Tripura worse than Bihar on women safety: Himanta Biswa Sarma

ANI

Agartala, June 24 : Assam Finance Minister and convener of the Northeast Democratic Alliance (Neda) Himanta Biswa Sarma has charged Tripura Chief Minister Manik Sarkar with failure to provide safety and security to women in his state.

Addressing media here, Sarma alleged that the situation in Tripura is worse than Bihar where 86 percent of the total crime committed is against women and the figure is rising every day.

"It is a matter of deep concern that 86 per cent of the total crime in the state is against women. Here the women are being raped, molested and tortured everyday and do not get any redress," he added.

He also criticised Sarkar for not visiting the guardians of a rape victim in his constituency.

Sarma was in Agartala on Thursday and Friday to streamline the Bharatiya Janata Party's strategy for next year's assembly elections.

He attended two party rallies at Charilam in Bishalgarh sub-division and Rajnagar in Belonia of South Tripura along with party president Biplab Deb and vice president Subal Bhowmik.

EC rejects pleas of 21 AAP MLAs

ANI

New Delhi, June 24 (ANI): In a major setback for the Aam Aadmi Party (AAP), the Election Commission (EC) on Friday rejected the pleas of 21 AAP legislators to drop the office of profit case filed against them.

The MLAs are facing prospects of disqualification for allegedly holding offices of profit.

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