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Nuclear Applications (Overview of Nuclear Applications in Nigeria)

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Abstract:

Nigeria is the largest oil producer in Africa and is currently the world's 12th largest oil producer, pumping 2.25 million barrels per day. According to the U.S. government's Energy Information Administration, "Nigeria has one of the lowest net electricity generation per capita rates in the

world. Electricity generation falls short of demand, resulting in load shedding, blackouts and a reliance on private generators. Nigeria has privatized its state-owned Power Holding Company of Nigeria (PHCN) with aim of greater investment and increased power generation”. On 24th March 2014, Nigerian President Goodluck Jonathan at the Nuclear Security Summit (NSS) in The Hague said that Nigeria will develop a nuclear energy industry. Most Nigerians see nuclear power as a means of providing electricity. He also told the NSS audience that Nigeria is committed to negotiations on a

“multilateral, internationally and effectively verifiable treaty banning the production of fissile materials for nuclear weapons”. While the Nigerian Nuclear Program was founded in 1976, Nigeria’s civilian nuclear energy aspirations began in 2007, when the then-President Umaru Yar'Adua said the country planned to add nuclear power to the national grid by 2017. After the accident at the nuclear power plant "Fukushima" some countries have decided on the gradual closure of nuclear power plants. However, the world is not going to give up the peaceful atom.

Objective: To highlight the interest of Nigeria in Nuclear Applications.

The Challenges in the power sector:



A survey of the market opinions and the general public revealed that the generation capacities of

generation plants are still under-utilized from poor gas supply, theft of electrical cables, inter-annual and seasonal variations in inflow to the water reservoirs/dams affecting the volume of water available for operating the turbines in hydroelectricity etc while the transmission system showed off elements of weakness with consumers complaining of poor service culture from the PHCN distribution networks. The PHCN in its effort in trying to combat its challenges has resorted to load shedding, blackouts etc

Privatization of PHCN for better power/ energy generation:



The Power Holding Company of Nigeria (PHCN), formerly the National Electric Power Authority (NEPA) which is an

organization that generates, distributes and transmits electricity in Nigeria was privatized with the aim of greater investment and increased power generation. Yet, the power generated is yet to meet the expected needs of the teeming Nigeria population as the challenges in the power sector seems insurmountable with the inadequate gas supply , vandalization of gas pipes, theft of electrical cables, inter-annual and seasonal variations in water inflow to the reservoirs affecting the volume of water available for operating the turbines and some times, the volume of water in the

reservoir is low, while at other times, the reservoirs are full without sufficient capacity to receive high inflow during the peak of rainy season in August or September for hydroelectricity hence more dependence on privately owned diesel and petrol generators by the industrial and commercial sectors.

Nigeria's Interest in Nuclear Applications:

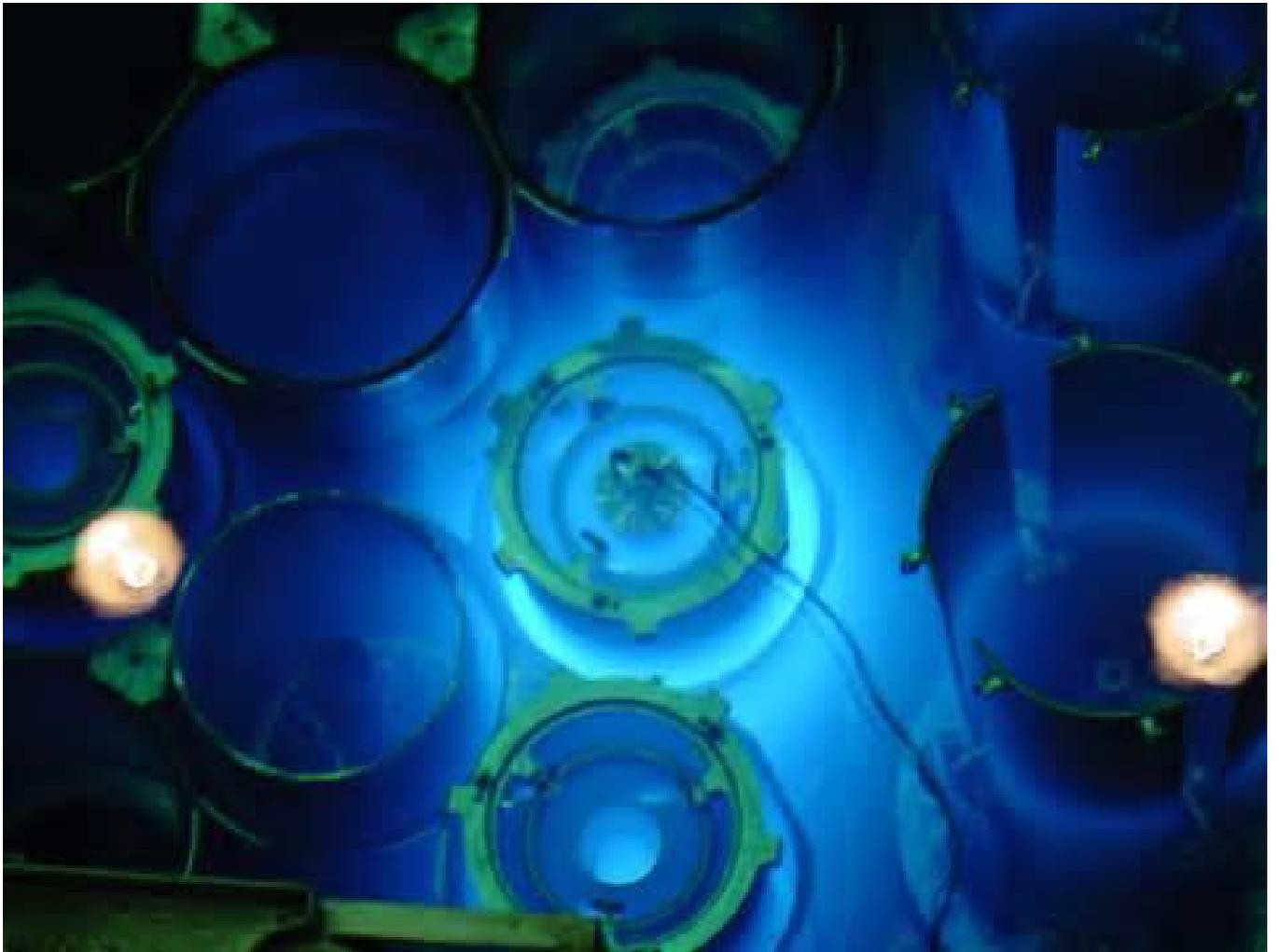


The Nigerian Nuclear Program was founded in 1976 but its civilian nuclear energy aspirations began in 2007, when the then-President Umaru Yar'Adua said the country

planned to add nuclear power to the national grid by 2017 and urged the country to embrace nuclear energy in order to meet its growing energy needs. On 24th March 2014, Nigerian President Goodluck Jonathan at the Nuclear Security Summit (NSS) in The Hague said that Nigeria will develop a nuclear energy industry. Most Nigerians see nuclear power as a means of providing electricity. He also told the NSS audience that Nigeria is committed to negotiations on a “multilateral, internationally and effectively verifiable treaty banning the production of fissile materials for

nuclear weapons”. Nigeria already has a nuclear research reactor, Nigeria Research Reactor-1 in Ahmadu Bello University in Zaria, Kaduna state also known as CERT (Center For Energy Research And Training). The Nigeria Research Reactor-1 is used for training purposes and is powered by enriched uranium. NIR-1, which was built by the Chinese and was commissioned in 2004. Nigeria’s first nuclear power plant is scheduled to come on stream in 2020 and to generate about 1,000 megawatts, with NPPs projected to contribute at least 4,000 MW to the country’s total national

electricity supply by 2030, which in the next sixteen years will effectively double Nigeria's electrical output.



Despite the accident at the nuclear power plant "Fukushima" some countries have decided on the gradual closure of nuclear power

plants but the world is not going to give up the peaceful atom.



Nuclear power has not only been adjudged economically competitive and environmentally friendly, but is also a viable alternative for long-term energy security. Nuclear power plants have low operational costs and the

added advantage of long life spans.

Conclusion: Nigeria's interest in nuclear applications for energy generation is not without fear of nuclear and radiological accidents which primarily involves nuclear power plant leaks, should be seriously tackled with as more developing countries nurtures its interest in nuclear technology and applications.

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