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Proposal of Nuclear Reactor FBNR for Dominican Republic

Executive Summary

The Fixed Bed Nuclear Reactor (FBNR) being a small innovative nuclear reactor is adequate for countries with small electric grids and limited investment capabilities. It produces 70 megawatts electricity and uses the well dominated Pressurized Water Reactor (PWR) technology. It has the characteristics of being small, proliferation resistant, inherently safe, passively cooled, and environmental friendly.

The FBNR is simple in design. The flow of water coolant transports the small spherical nuclear fuel elements from the fuel chamber up into the reactor forming a fixed bed suspended core. Any accident signal will cut off the power to the coolant pump causing the flow to stop. This results in making the fuel elements fall out of the reactor core by the force of gravity and return back into the fuel chamber where they remain under the subcritical and passively cooled conditions.

The FBNR reactor can produce both electricity and desalinated water in a dual purpose plant. It will consist of the FBNR and a desalination system coupled to the reactor, sharing common systems and facilities, producing both, fresh water and electricity. The dual purpose plant can produce desalinated water at 30% to 40% lower cost compared to a single purpose plant.

The simplicity and passive safety characteristics of the FBNR in the ambit of a well dominated technology, makes it a viable option for the near future deployment. Presently the FBNR reactor concept is being developed with the support of the International Atomic Energy Agency (IAEA).

The next stage of the program is to construct the prototype of this reactor. Since the technology of FBNR is essentially that of the well known PWR, the project will involve subcontracting the works to the existing companies and institutions around the world that can provide the services and components.

Dominican Republic can host the project by providing convenient financial, administrative and legal means for its deployment. The main investment will come from the international investors who recognize the profitability of investing in such an innovative nuclear reactor project. Dominican Republic will only need to make a small investment to initiate the activities.

The non-proliferation characteristic of FBNR and it being deployed under the auspices of the International Atomic Energy Agency (IAEA), will assure the world that Dominican Republic is engaging only in the peaceful uses of nuclear energy. Dominican Republic by deploying the FBNR project through friendly laws and regulations in protecting the foreign investments and satisfying itself with the nuclear standards established by the IAEA without complicating them with new restrictions, can benefit immensely from the economic and technological gains that it will bring about. Dominican Republic will become a pioneer for developing countries that need small nuclear reactors while protecting the environment against global warming.