

STUDY OF NUCLEAR POWER PLANTS



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CERTIFICATION OF APPROVAL

This is to certify that the B.Sc. in Mechanical Engineering thesis entitle “A Study On Nuclear Power Plant System” submitted by this group- **Md. Arif Ahammad, BME: 1901017556, Md. Samiul Islam, BME 1901017248, Md. Sifat Ullah Khan, BME: 1901017251, Mirazul Hoque, BME: 1901017268.** The thesis represents an independent and original work on the part of the candidates. The whole work of this thesis has been planned and carried out by this group under supervisor and guidance of the professor of Sonargaon University (SU), Dhaka, Bangladesh.

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DECLARATION

We do hereby solemnly declare that the work presented in this report has been carried out by us under the supervisor of professor Md. Mostofa Hossain Department of Mechanical Engineering in Sonargaon University (SU). We have tried our best to make the report with accurate with information and relevant data.

We further undertake to indemnify the university against any loss or damage arising from breach of the forgoing obligation.

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ABSTRACT

Nuclear power plants can provide cheap electricity, with smaller amount of global problems than fossil-fueled power plants. In the future, as nuclear technology is moving forward, more advanced technologies will be available. These new technologies will bring nuclear power plants close to sustainable electricity generation. However, nuclear power is not the solution to cover the electricity demand in long term. Chapter one, important aspects of nuclear physics for nuclear plant technology are explained. In a fission process, as an atom splits to form two new atoms, it goes from more loosely bound nucleus to two more tightly bound nuclei. A chain reaction refers to a process in which neutrons released in fission produce a additional fissions in at least one further nucleus. Fission energies, fission products as waste explained here. The probabilities like fission, neutron capture or kinetic energy exchange between colliding parts (scattering) are defined as the cross section of a nucleus for that particular reaction. Radioactivity measurements, biological affects of radiation also explained here. Chapter two, the source-end of nuclear fuel cycle is introduced .Physics of operating a nuclear reactor is explained. Nuclear power reactor like Uranium–fuelled Reactor, Plutonium-fuelled Reactor, Light water (PWR) boiling water reactor (BWR) are explained here. Fission process from nuclear to thermal explained here. Heat generation, control facilities also explained. Chapter three, Current and future technologies are presented in third chapter with reasonable detail. Basic concept of power are reactors also explained here. Components of nuclear reactors, coolant system, different reactors with some reactors comparison has explained. Refueling of reactor also explained here. Advanced reactors also explained here in detail.

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