

RESEARCHES FOR THE DEVELOPMENT OF A DEVICE FOR THE DECOMMISSIONING OF THE HORIZONTAL FUEL CHANNELS IN THE CANDU 6 NUCLEAR REACTOR. DECOMMISSIONING DEVICE PRESENTATION

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Abstract: *The objective of this paper is to present a possible solution for the designing of a device for the decommissioning of the horizontal fuel channels in the CANDU 6 nuclear reactor. The decommissioning activities are dismantling, demolition, controlled removal of equipment, components, conventional or hazardous waste (radioactive, toxic) in compliance with the international basic safety standards on radiation protection. One as the most important operation in the final phase of the nuclear reactor dismantling is the decommissioning of fuel channels. For the fuel channels decommissioning should be taken into account the detailed description of the fuel channel and its components, the installation documents history, adequate radiological criteria for decommissioning guidance, safety and environmental impact assessment, including radiological and non-radiological analysis of the risks that can occur for workers, public and environment, the description of the proposed program for decommissioning the fuel channel and its components, the description of the quality assurance program and of the monitoring program, the equipments and methods used to verify the compliance with the decommissioning criteria, the planning of performing the final radiological assessment at the end of the fuel channel decommissioning. These will include also, a description of the proposed radiation protection procedures to be used during decommissioning. The dismantling of the fuel channel is performed by one device which shall provide radiation protection during the stages of decommissioning, ensuring radiation protection of the workers. The device shall be designed according to the radiation protection procedures. The decommissioning device assembly of the fuel channel components is composed of the device itself and moving platform support for coupling of the selected channel to be dismantled. The fuel channel decommissioning device is an autonomous device designed for dismantling and extraction of the channel closure plug and shield plug, extraction of the end fitting, cutting and extraction of the pressure tube. The fuel channel decommissioning device consists of following major components: coupling and locking fuel channel module, assembly valve for access to the fuel channel, storage tubes assembly for extracted components, handling elements assembly, cutting and extraction device and housing device. The design of the device and platform support is achieved according to the particular features of the fuel channel components to be dismantled in the program of nuclear reactor decommissioning according to all the safety aspects and environmental protection during the activities, resulting from the decommissioning plan developed.*

Keywords: *Candu reactor, device, decommissioning, dismantling, radiation protection, fuel channel*

1. General Introduction

The CANDU reactor decommissioning activities are dismantling, demolition,

controlled removal of equipment, components, conventional or hazardous waste (radioactive, toxic) in compliance with the