

OUT OF REACTOR TESTING TECHNOLOGIES OF F/M HEADS – ROMANIAN EXPERIENCE FUNCTIONAL TESTING OF TELESCOPIC CYLINDER RAM ASSEMBLY

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Rezumat. Testarea capetelor MID (mașina de încărcat/descărcat) înainte de introducerea lor în reactorul CANDU este o activitate de maximă importanță în procesul de punere în funcțiune a centralei nucleare – electrice. De reușita acestei activități ce se derulează pe perioada de 9 luni pentru un cap MID, depinde exploatarea în condiții de siguranță și putere maximă a reactorului. Finalizarea testării capetelor MID pentru Unitatea 2 de la Cernavodă, certifică atât buna funcționare a mașinilor cât și capacitatea personalului și a tehnologiei existente la ICN Pitești de a realiza activități de o mare complexitate pentru centralele nucleare, testarea mașinilor reprezentând o premiere națională și europeană.

Abstract. Testing of F/M Heads (loaded/unloaded car) before installing them in the CANDU reactor is a task of utmost importance in the process of commissioning the nuclear power plant. Maximum capacity reactor operation in safe conditions depends on successfully testing of the F/M Heads. Completion of F/M Heads Testing for Cernavoda Unit 2, certifies both the proper functioning of the machinery as well as the ability of the staff and existing technology from INR Pitești to achieve complex activities for nuclear power plant, F/M Heads testing being a national and European premiere.

Keywords: CANDU, Fuelling Machine Head, testing rig, acceptance test

1. Introduction

CANDU reactors are PHWR type (Pressure Heavy Water Reactor) reactors using natural UO₂ fuel and heavy water as a coolant and moderator.

An important feature of this type of reactor is the fact that it does not require to be shut down in order to be refueled. The fuel change is done automatically, while the reactor is operational, by two loading/downloading machines [Fuelling Machines Heads].

Two F/M Heads, which work in tandem, are used in a CANDU 600 reactor: one introduces fresh fuel in the reactor fuel channel; while the other receives the spent (burned) fuel.

The proper operation in safe conditions of F/M Heads is one of the conditions that determine the efficient and secure operation of the CANDU NPP; the on-time fuel

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