

U1.01/97A Containment sump clogging protection for Rovno units 1 and 2

Project description

This project implemented in the frame of the European Commission TACIS Nuclear Safety Programme deals with one of the most important aspects of NPP safety which is the solution of the problem of overcoming common cause ECCS failure at loss of coolant accidents (LOCA) of VVER-440/V-213 units.

The objective of the project is to install new filters improving the protection against the clogging of containment sumps of Units 1 & 2 of Rovno NPP that permits to avoid the ECCS common cause failure due to destroyed heat insulation debris washed out by water flows to the emergency sumps.

This contract includes design, safety analysis, qualification of filter prototype, local manufacturing, factory acceptance tests and delivery of 6 sump filters, documentation in English and Russian as well as provision of installation and licensing support, acceptance and commissioning tests, equipment qualification and elaboration of a training manual.

Contract amount : 985 k Euro

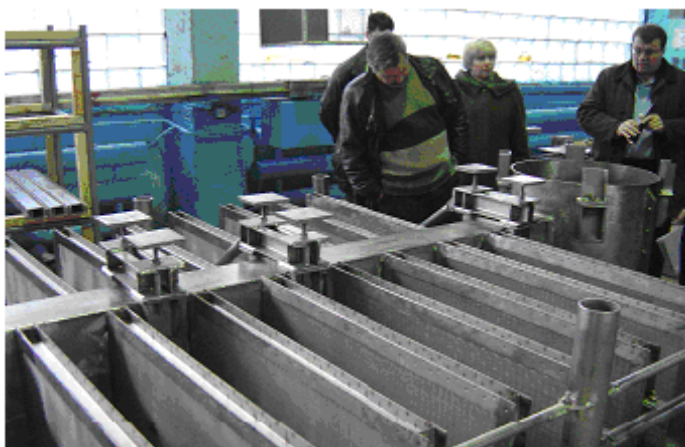


Fig. 1 - Filters during Factory Acceptance Tests

Organisations involved

Funding and logistic support: EC

Beneficiary: NAEK ENERGOATOM

End User: ROVNO NPP

Procurement Agent: ITALTREND/GOPA

Supplier: FRAMATOME ANP/FORTUM

Nuclear Services Ltd

Local Manufacturer: EUM/INCONSATOM

Integration studies: KIEP

Installation and testing: ROVNO NPP

On Site Assistance: EDF (EC Consultant)

Sump Filter Design

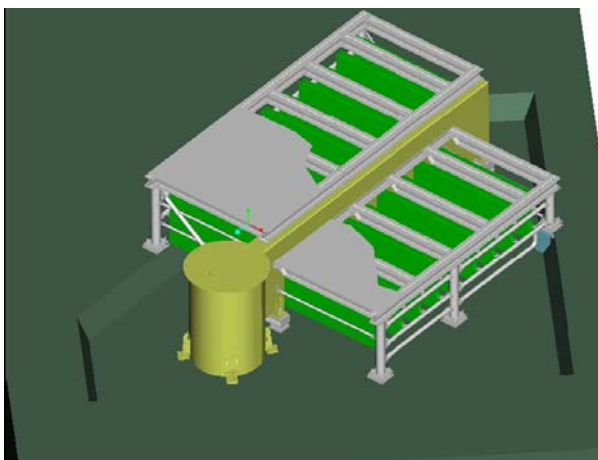


Fig. 2 - Filter module

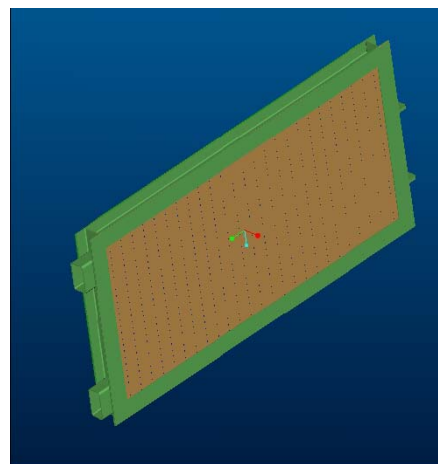


Fig. 3 - Filter plate

Equipment cost : 640 k Euro

Time Schedule

1997 - May 2000 Elaboration & approval of the Technical Specification for supply

February 2001 Tender Launch

January 2002 Signature of the supply contract

21 & 22 January 2003 Qualification tests of sump filter prototype

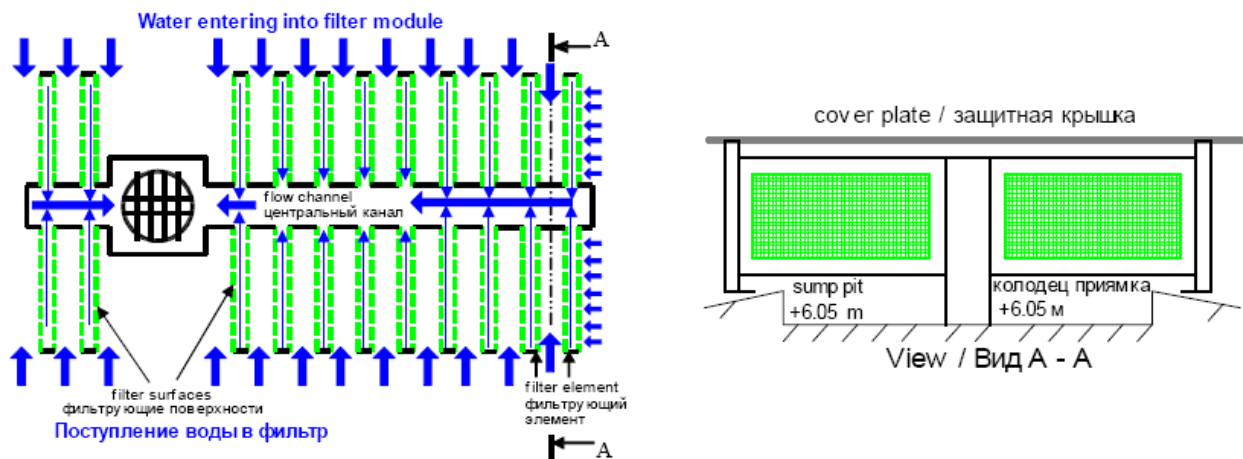
2002-2004 Elaboration of the Justificatory documentation for licensing

August 2003 - June 2004 Manufacturing by Ukrainian subcontractor EUM & Factory Acceptance Tests

May 2004 3 sump filters were installed and commissioned in RNPP Unit 1

July 2004 3 sump filters were installed and commissioned in RNPP Unit 2

Sump Filter Operating Principle / Принцип работы фильтров



Main Benefits of the project

- In the recirculation mode following a LOCA, the new sump filters maintain water sufficiently free of debris and air as well as at sufficient inlet pressure to satisfy pump NPSH requirement so that pump performances are not degraded to the point that the long term recirculation requirements cannot be met
- Technical exchanges during the different stages of the project, particularly within the “2+2” approach and during manufacturing of the filters

Sump filter commissioning



Safety improvement

- This project was developed in accordance with the Safety Improvement Programme for ROVNO 1&2 with the VVER-440/213 Reactor Plants
 - The new sump filters address the high safety concerns regarding the possibility of maintaining circulation of ECCS and spray system after a medium or large loss of coolant accidents (LOCA)
- During the project implementation was applied the “2+2” approach involving the Western and Ukrainian Regulatory Bodies with their respective Technical Support Organisations