

Checking of storage pools liners with underwater robot

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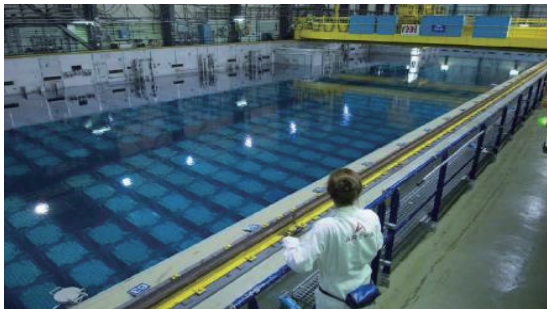
At Orano La Hague reprocessing plant, in the frame of inspections to be made on the installations to ensure the conformity of equipment, development of specific tools for areas with difficulties of access is an issue (hot cells, storage pools ...).

An underwater robot aiming to verify fuel storage pools liners by ultrasonic measurement is under development by Orano engineering team

Keywords: Spent Fuel Storage Pools – Liner verification equipment – Robot – Ultrasonic measurement

1. Introduction

Orano La Hague has several pools for the storage of spent fuels before reprocessing..



In the frame of investigations regarding conformity and aging of installations, it became necessary to develop an equipment to check the status of the storage pools liners.

2. Development/Implementation

2.1 Organization

In the case presented, decision was made to develop internally by Orano cycle engineers (La Hague site operator) These engineers are in charge of the verification of equipment conformity and aging evaluation

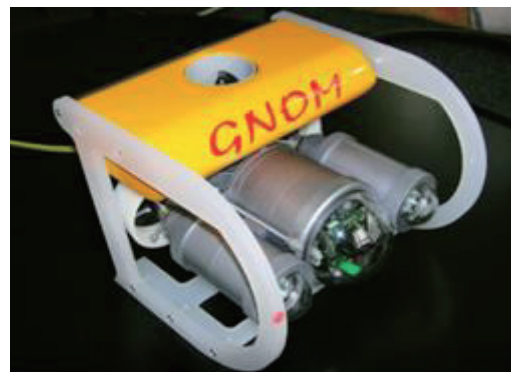
2.2 Initial situation

No suitable equipment available. Two possibilities were studied:

Adaptation of existing underwater camera robot, to add US probe measurement.

Advantages: Fast implementation of the inspection, no inaccessible zone, video and measurement on the same module, facility operation possible during inspection, robot already available on facility.

Disadvantage: No probe support on the robot, must be developed.



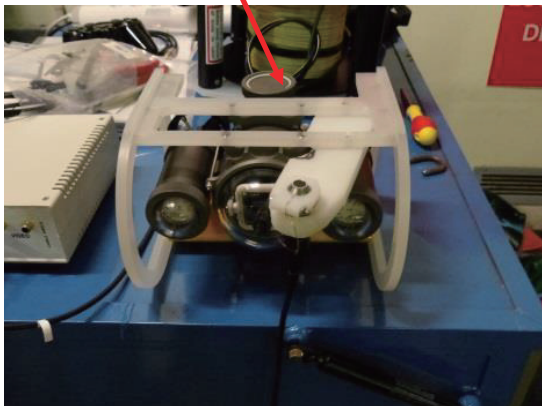
Rod equipped with US probe and video device.

Advantages: Rods and probes already available on facility.

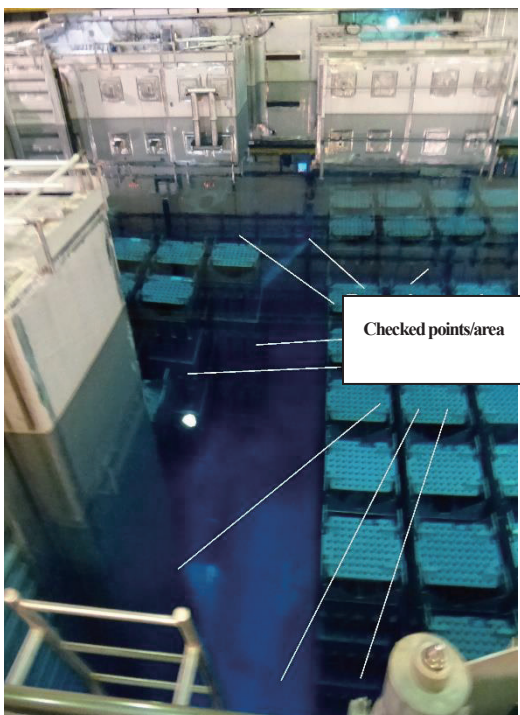
Disadvantage: Inaccessible area of inspection, no support to adapt US probe on the rod, radiological exposure of workers, long intervention time, difficulty of carrying out inspection (15 meters rod)

2.3 Selected technical solution

Integration of the US measuring device in the existing robot (support and probe)



Prototype support manufactured and tested underwater (inactive) in the offices of the Compliance Aging team. Validation test carried out in active condition inside the storage pool D of La Hague. Fast intervention: 2 man.day, 60 measuring points carried out covering 25% of the available surface ie 60 m2. It is estimated that the same intervention with rods would have required 12man.day.



3. Conclusion

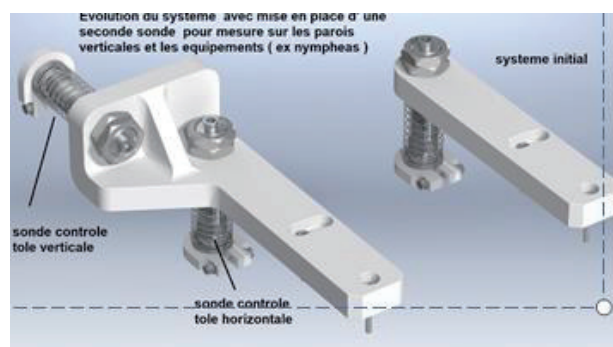
This development was carried out by the Orano engineers, that is to say close to the process, knowing perfectly the installations

It allowed :

- Fast design, manufacturing and validation tests, so low cost.
- Development of inspection method with small impact to the availability of the operation
- No radiological exposure for workers
- A possible use for all types of storage pools as well as transfer channels.

4. Perspective

Next step, designing a probe support for measurement on vertical and horizontal walls



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