



MIXED ALPHA / ASBESTOS RISK MANAGEMENT AT EDF-DP2D

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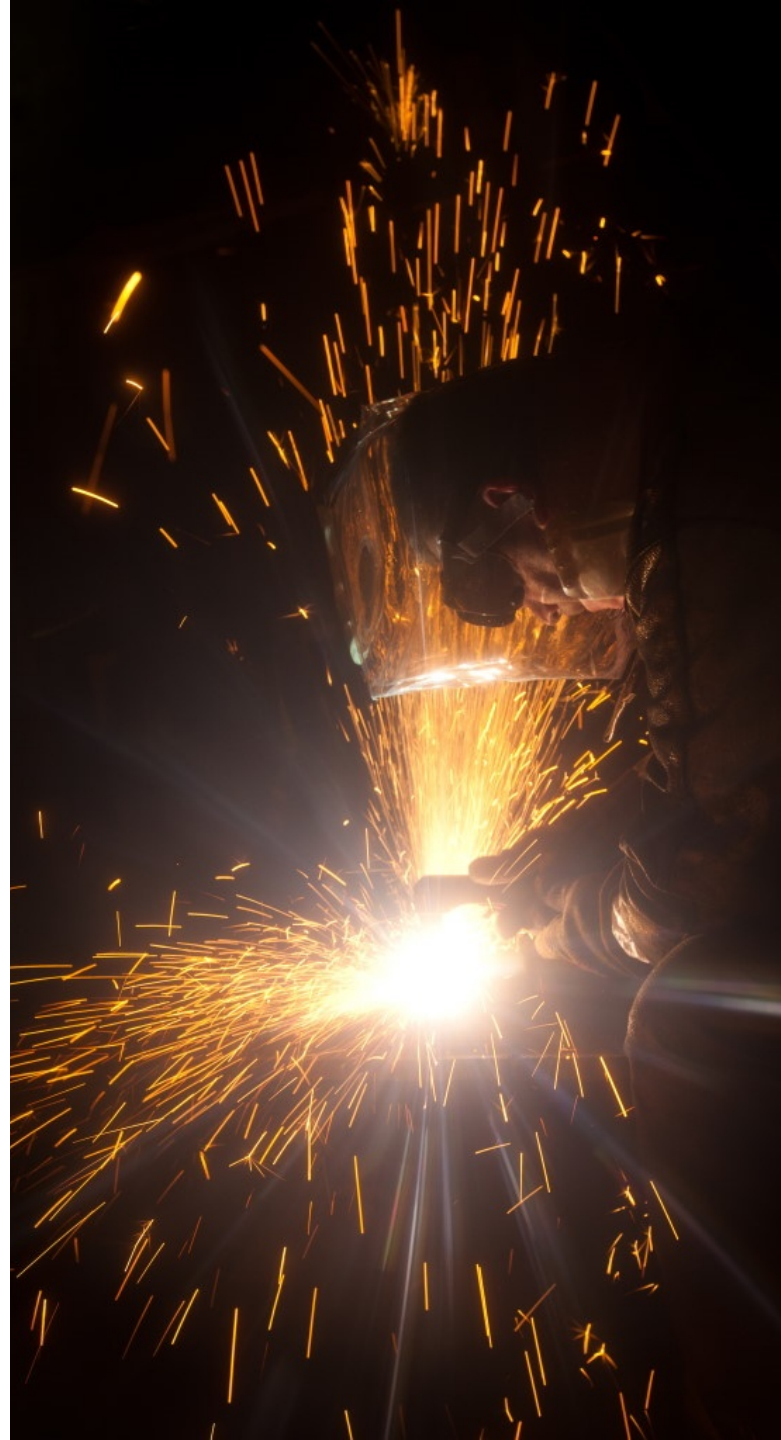
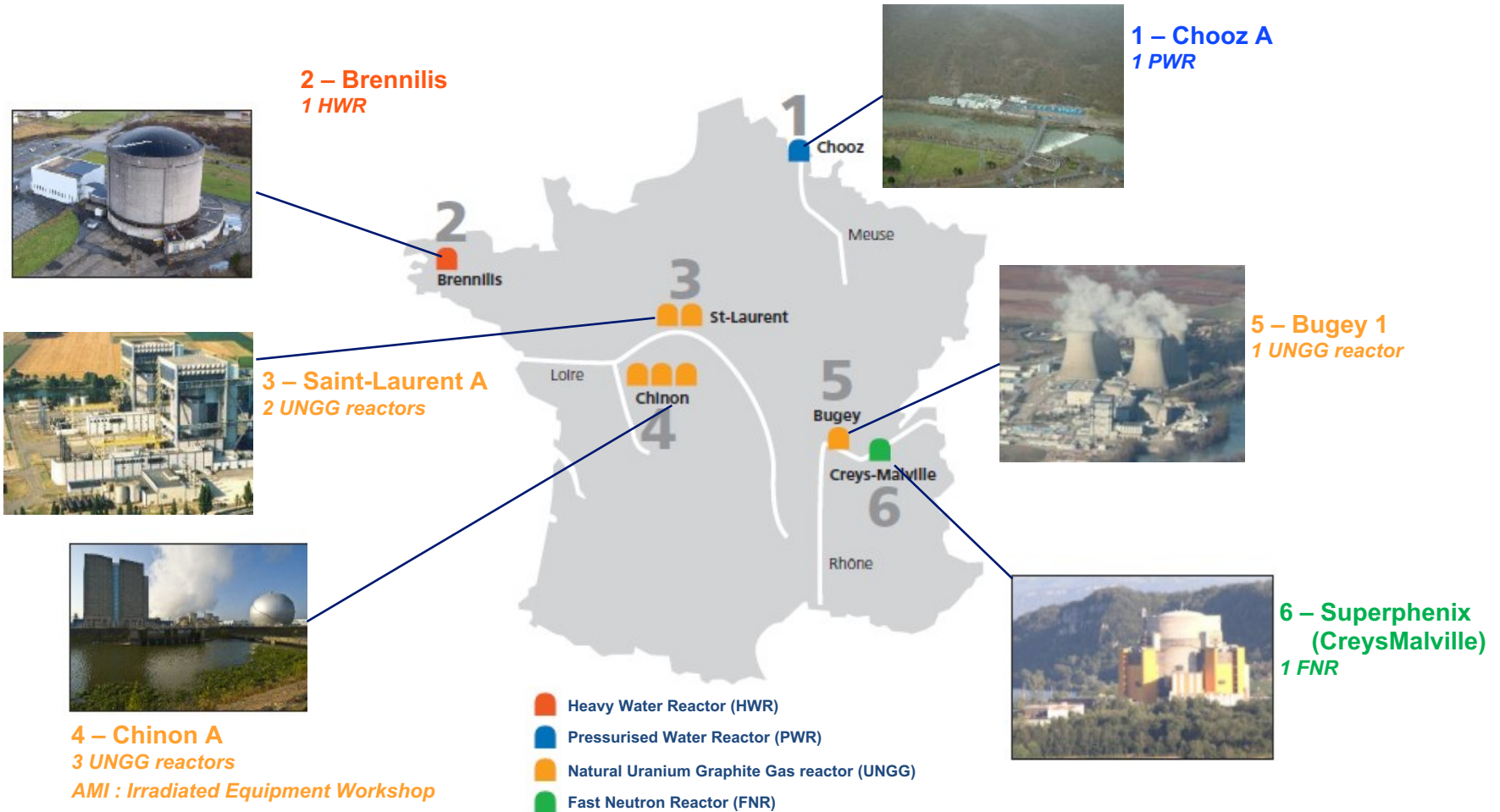


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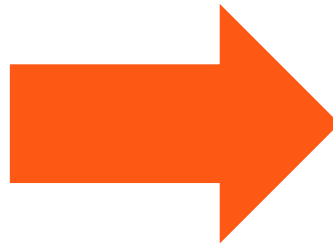
OVERVIEW OF THE EDF FACILITIES IN DECOMMISSIONING



ASBESTOS : WHICH FACILITIES IN DECOMMISSIONING CONCERNED AT EDF ?



Asbestos is forbidden in France since 1997



All EDF facilities currently in decommissioning are concerned

ALPHA CONTAMINATION : WHICH FACILITIES IN DECOMMISSIONING CONCERNED AT EDF ?



MIXED ASBESTOS / ALPHA WORK SITES

WHY IS IT AN ISSUE ?

- No existing French regulation at the moment for combined alpha / asbestos risk management
- Alpha risk mitigation practices sometimes incompatible with asbestos regulation :
 - Water is required in asbestos work sites for :
 - Lowering the fiber release level
 - Personal and equipment decontamination
 - But drawbacks of water in controlled area :
 - Effluents management issue : increasing operators exposition risk
 - Water : contamination vector (radiological cleanliness issue)
 - Water : constraint related to alpha contamination monitoring (shielding)

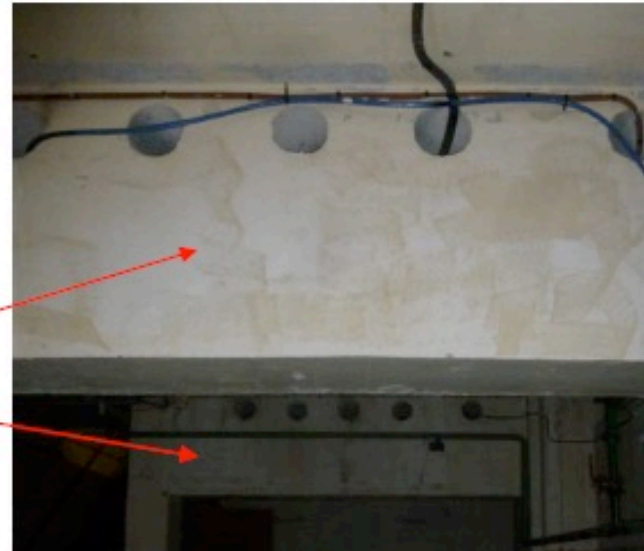
➔ HOW TO MAKE THESE TWO WORLDS COMPATIBLE ?

BUGEY 1 : ALPHA CONTAMINATED ASBESTOS SLEEVES EXTRACTION IN HK301

Location : HK301 – Fuel Pool sector

→ Fibrocement sleeves embedded in a reinforced concrete beam

2 beams at the ceiling including each 5 asbestos sleeves



Radioactive surface contamination :

$\beta \approx 40 \text{ Bq/cm}^2$

$\alpha \approx 7 \text{ Bq/cm}^2$



BUGEY 1 : PROCESS DESCRIPTION

(PERFORMED BY SUBCONTRACTING)

- Extraction process : Chiselling (fracturing)
- Impacted surface for each sleeve :
 - Lateral side : 35 cm²
 - Inner surface : around 3400 cm²
- Technical process releasing both **asbestos fibers** and **alpha aerosols** in airborne
- Risk analysis :
 - Collective Dose Forecast : 0,09 H.mSv → Very low level
 - Alpha volume activity estimated in work-site airlock ≈ 14 Bq/m³
 - Asbestos dust airborne level ≈ 1300 fibers/l (classified in level 2)



BUG1 : PERSONAL PROTECTIVE EQUIPMENT

	Criteria	Respiratory Protective Equipment	Suit
Asbestos Criteria	PPEs defined according to the airborne fiber rate forecast	Air supplied respirator fitted with P3 cartridge	Disposable full double suit
Alpha criteria	PPEs defined according to the volume activity level (beta / alpha) in the work site (depending on the process used)	Options allowed by EDF/DP2D RP standards : <ul style="list-style-type: none">- Powered respirator fitted with P3 cartridge- Air supplied respirator fitted with P3 cartridge	Disposable full paper suit (paper suit, vinyl gloves, overboots, ...)
		Bubble suit	

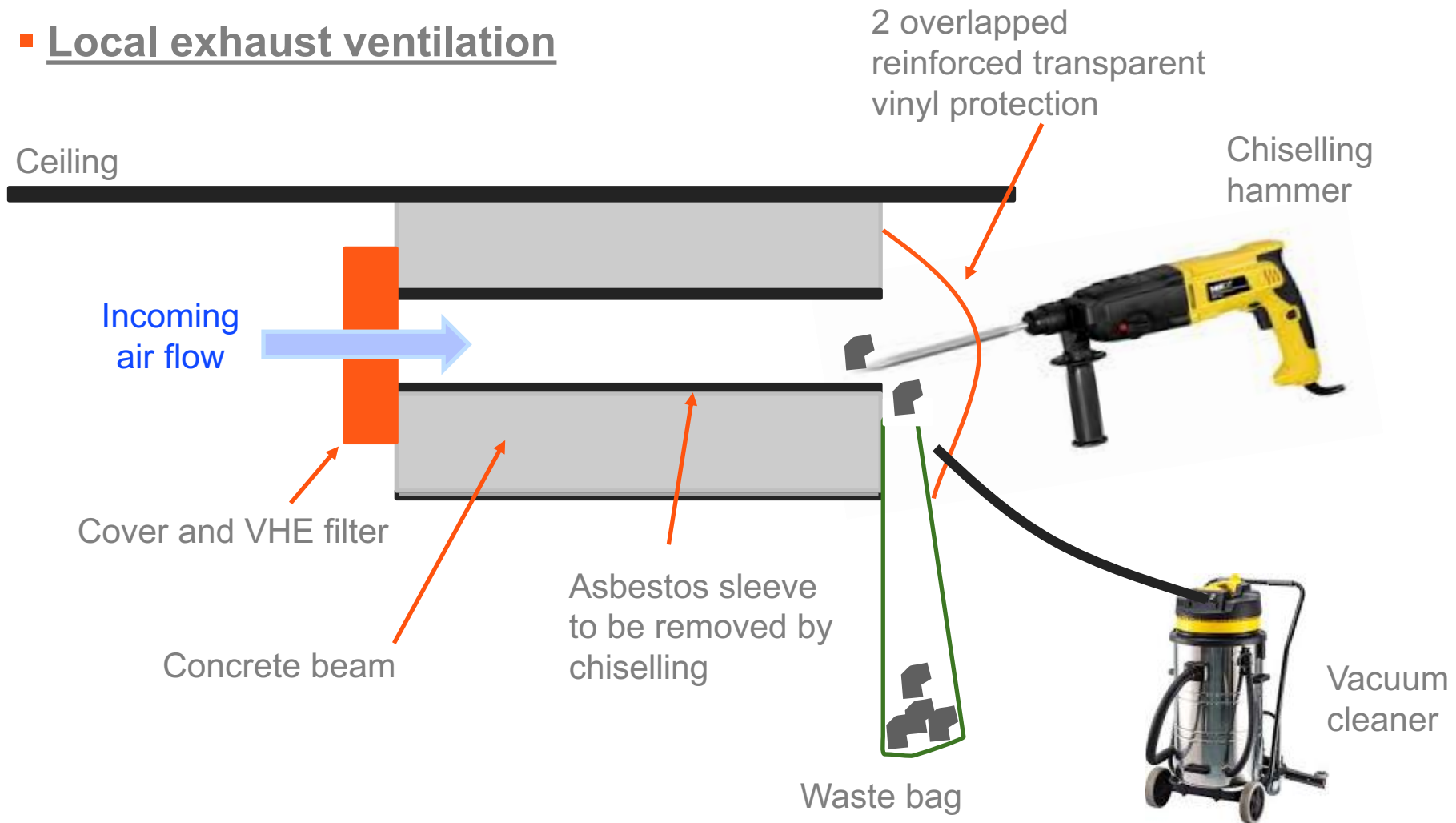
Option chosen for this asbestos / alpha work site :

Disposable full double suit
+
Air supplied respirator P3



BUG1 : COLLECTIVE PROTECTIVE EQUIPMENT

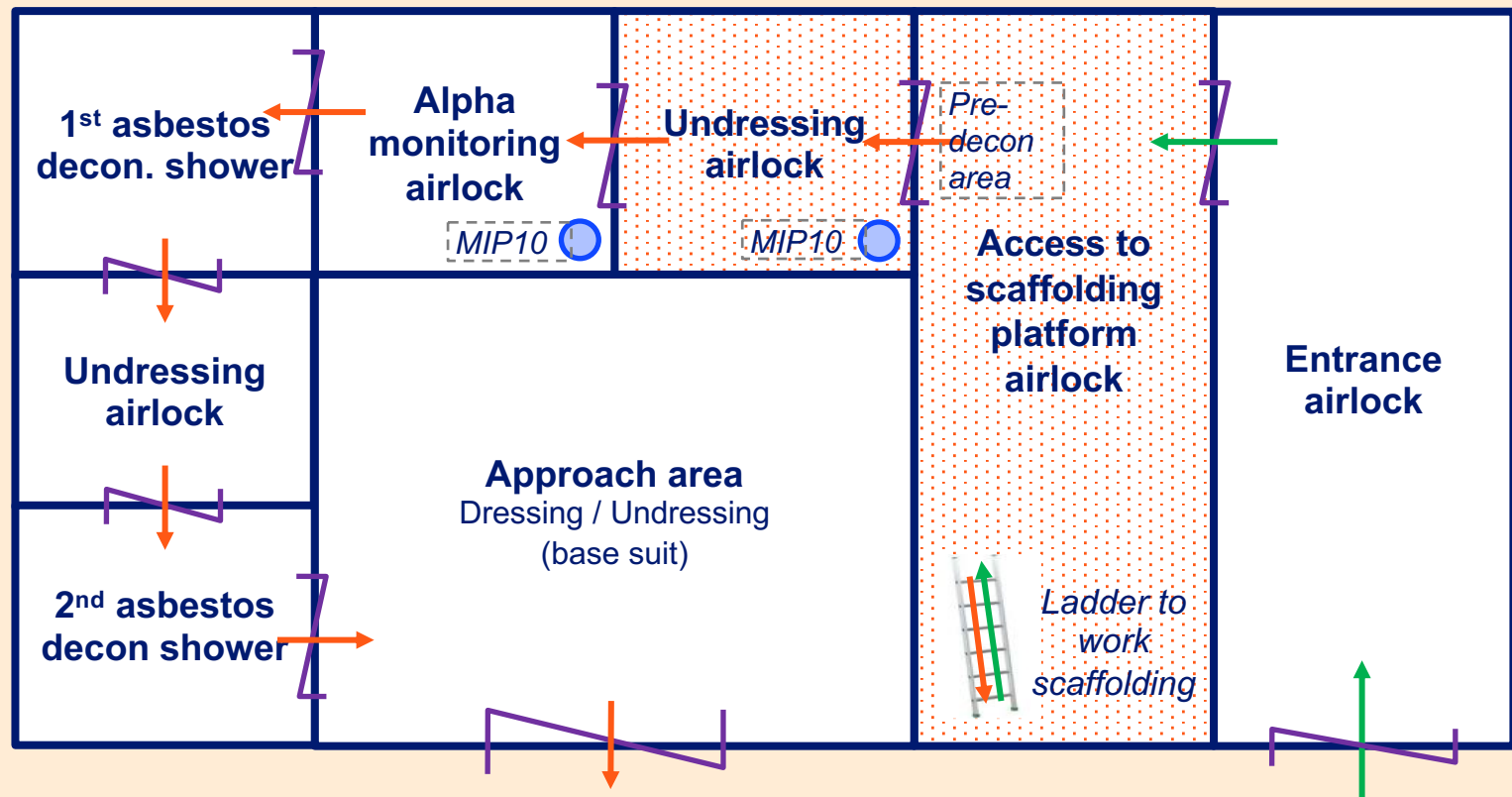
■ Local exhaust ventilation



BUG 1 : COLLECTIVE PROTECTIVE EQUIPMENT

- Optimized airlock layout for mixed alpha / asbestos work site

HK 301 room : round floor



BUG1 : PERSONAL PROTECTIVE EQUIPMENT



BUGEY 1 : OTHER GENERAL PROVISIONS

- **Mock-up training** before starting the work
- **RP monitoring** :
 - Enabled alpha channel on portal monitor at controlled area exit
 - Aerosols detection beacons in HK 301
- **Logbook**
- **Sleeves treatment order** : from the less to the most contaminated
- **Specific medical surveillance** (mucus and faeces analysis)
- **Shower effluents management** :
 - Effluents collected in a tank after filtration
 - Radiological analysis before releasing to ensure release limit authorization compliance
- **Waste management** :
 - Technological wastes (suits, PPEs, ...) without stream at the moment (non bound asbestos with alpha contamination)
 - ➔ Temporary storage on site (L&I Level Waste area) in double bag / metal drums

WORK IN PROGRESS AND PROSPECTS

- ORANO, CEA and EDF workgroup created in April 2017
- Proposal : to put in place an alternative **undressing and asbestos decontamination** by replacing decontamination water shower by a **red-colored surfactant** (Ex: POLYASIM)
- Technical guidelines : « worker's protection in combined nuclear and asbestos risk worksites »
 - Sent to DGT (French Labor General Direction)
 - Has to be validated by CEVALIA commission before experimentation
- Experimental worksites to be defined and achieved under a specific DGT derogative decree (2 years)
- Objective : to demonstrate the efficiency of this alternative solution proposed by the ORANA-CEA-EDF workgroup
- Regulatory amendment to follow if the experiment succeeds

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