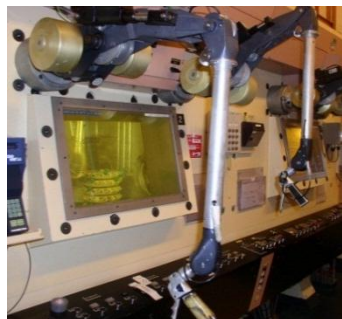


DE LA RECHERCHE À L'INDUSTRIE

cea



NucLab CEA Marcoule O. Dugne



nuclab@cea.fr
September 2012



www.cea.fr



an analysis laboratory serving the nuclear industry

Background and context: 50 years of experience



HISTORY and KEY DATES

- 1958: Initial role (Central Laboratory)
 - Support for plutonium production at Marcoule (UP1 plant)
 - Process monitoring, material balance
 - Liquid and solid waste characterization
- 1997: End of plutonium production
- 1998: Laboratory upgrade in anticipation of future operations:
 - Cleanup, dismantling
 - Retrieval and repackaging of legacy waste
- 2005: Laboratory department continues to be operated by AREVA NC under CEA responsibility
- 2010: Decision to propose services to other clients outside Marcoule
- 2012: Creation of NuLab (CEA-AREVA partnership)



A few figures

- **NucLab includes 85 persons with 65 analysts**

- **Restricted security area**

- **The building is licensed for treatment of all types of material arising from the nuclear industry:**
 - U, Pu (pure or with $\beta\gamma$ emitters)
 - Tritium

- **Large Containment enclosures available in restricted access zones:**
 - 95 fume hoods
 - 43 glove boxes
 - 35 shielded cells



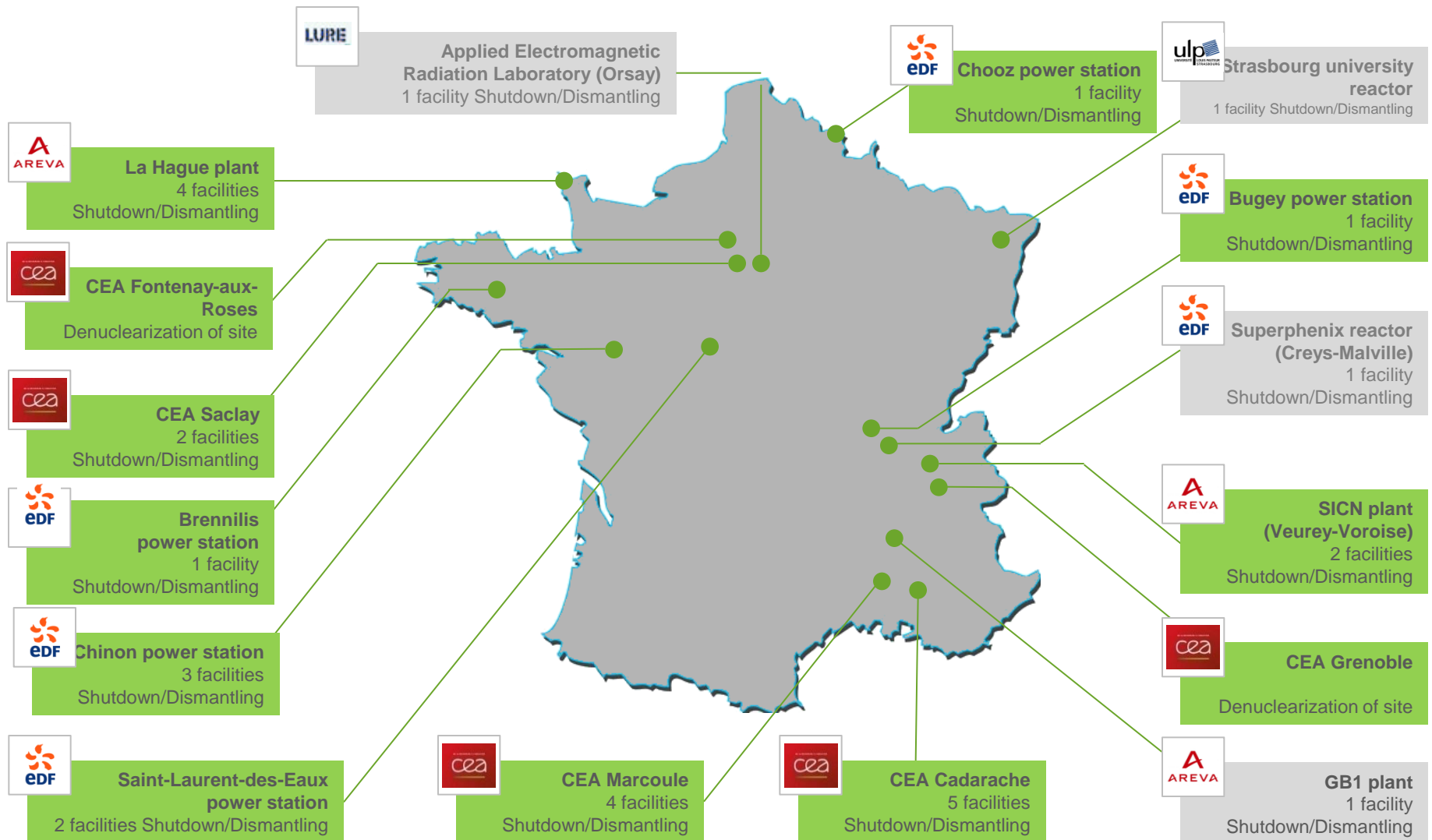
- **Catalog of 329 industrial methods**

Production capacity (2011)

- 77 500 hours of engineering and analysis services
- 3500 samples
- 14 000 determinations
- Normal working hours or 2 shifts
- Over 400 Quality Assurance documents (MO, MA, PR, DQ, etc.)
- Services are performed in compliance with standards ISO 9001 v2000, ISO 14001 v2004 and OHSAS 18001 v1999
- Clients:
 - CEA (DEN,DAM),
 - AREVA NC Marcoule, La Hague, MELOX, TNI, STMI, Eurodif
 - EDF,CENTRACO
 - Onet
 - etc.



NucLab in the French cleanup and dismantling market



Organization by activity

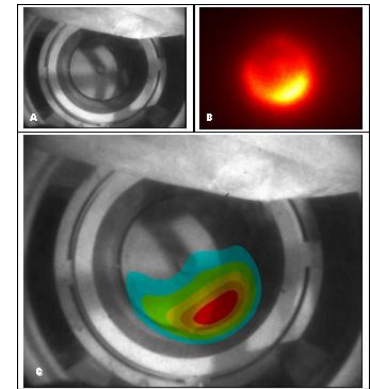
■ Analytical chemistry Laboratory

■ Radioactivity measurements Laboratory

■ Design, Methods and Nuclear Measurements Laboratory

■ Industrial chemistry and projects Laboratory

■ Nearby: Metallography and Chemical Analysis Laboratory



■ Quality Control

- Analysis programs on incoming products, process control, and inspection of finished products
- Allowance for industrial process operation and customer requirements (working hours, response time)

■ Technical appraisal: chemical, radiochemical, nuclear measurements in dismantling context

- Design and qualification of nuclear measurement processes
- In situ nuclear and chemical measurements and interpretation (**POSTER HOT LAB**)
- Experimental studies to improve and qualify industrial chemistry and chemical engineering processes
- Qualification of chemical, physicochemical and radiochemical analysis methods (**POSTER HOT LAB**)
- Chemical and radiochemical sample characterization



Waste treatment services

- **Qualification of treatment processes for radioactive waste without industrial disposition routes:**
 - **Mineralization of organic effluents heavily contaminated with alpha and beta emitters in supercritical media by hydrothermal oxidation, with a capacity of a few hundred liters per year (60 liters of oil mineralized in 2010) (POSTER HOT LAB)**
 - **Mineralization of ion exchange resins by silver(II)-catalyzed electrolytic dissolution (POSTER HOT LAB)**
 - Solvent decontamination (degraded TBP)
 - Extraction and purification of nuclear material
 - Final conversion to PuO_2



NucLab Key Features

- Industrial laboratory of analysis and expertise LA/MA/HA
- High capability of analyses
- Emergency analyses
- Services dedicated to dismantling et industrial processes
- Expertise of on site nuclear instrumentation
- Specific waste treatment





an analysis laboratory serving the nuclear industry

