



Andra Radioactive Waste Disposal Sites

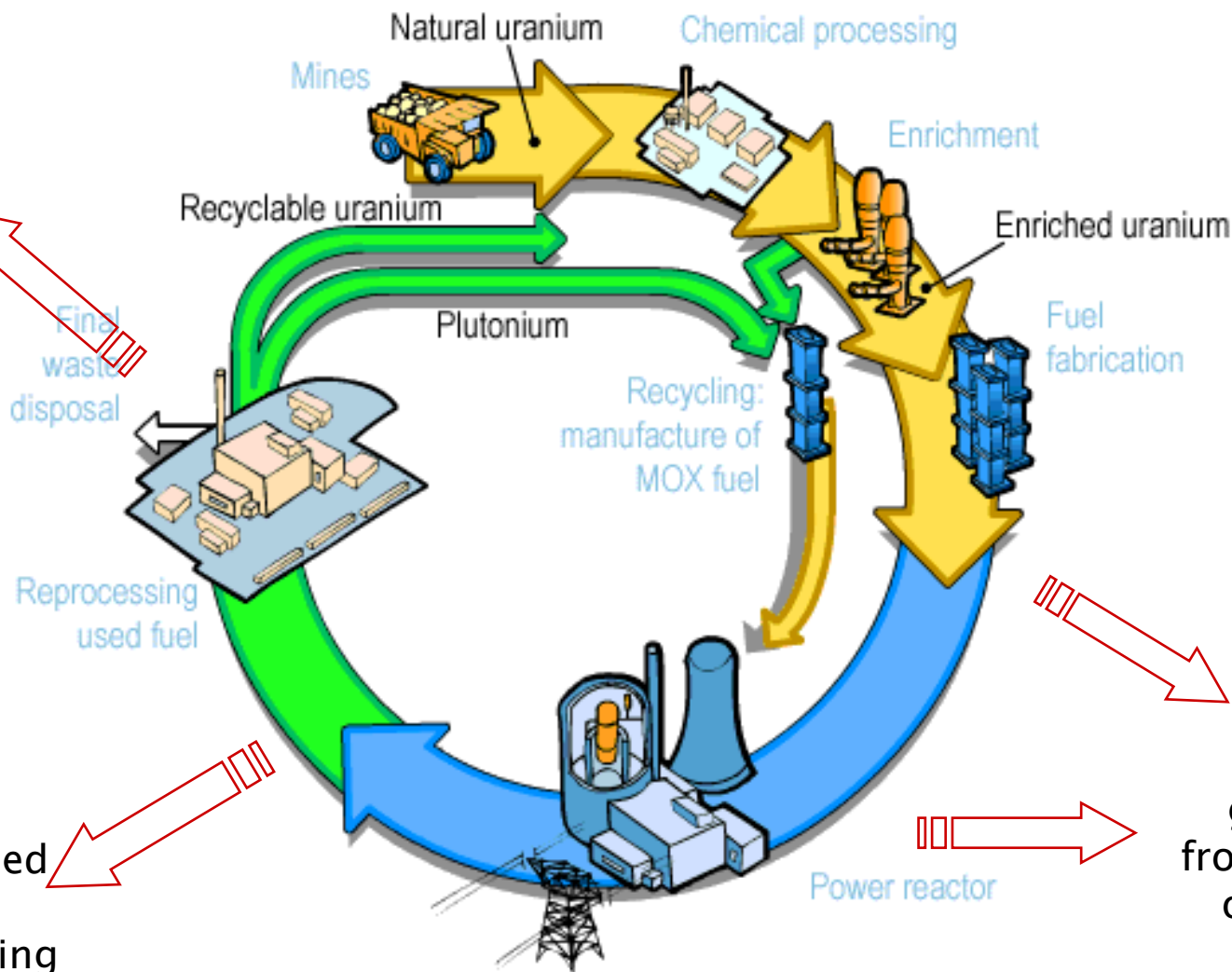
Dr Gérald OUZOUNIAN

ANDRA, Director

International Seminar
Nuclear Decommissioning: an opportunity for Global and
sustainable development
Sogin – Milano, 12 december 2014

The nuclear fuel cycle

Waste generated from fuel processing



Waste generated from industrial operations

Waste generated from decommissioning facilities

The French classification

Short-lived waste

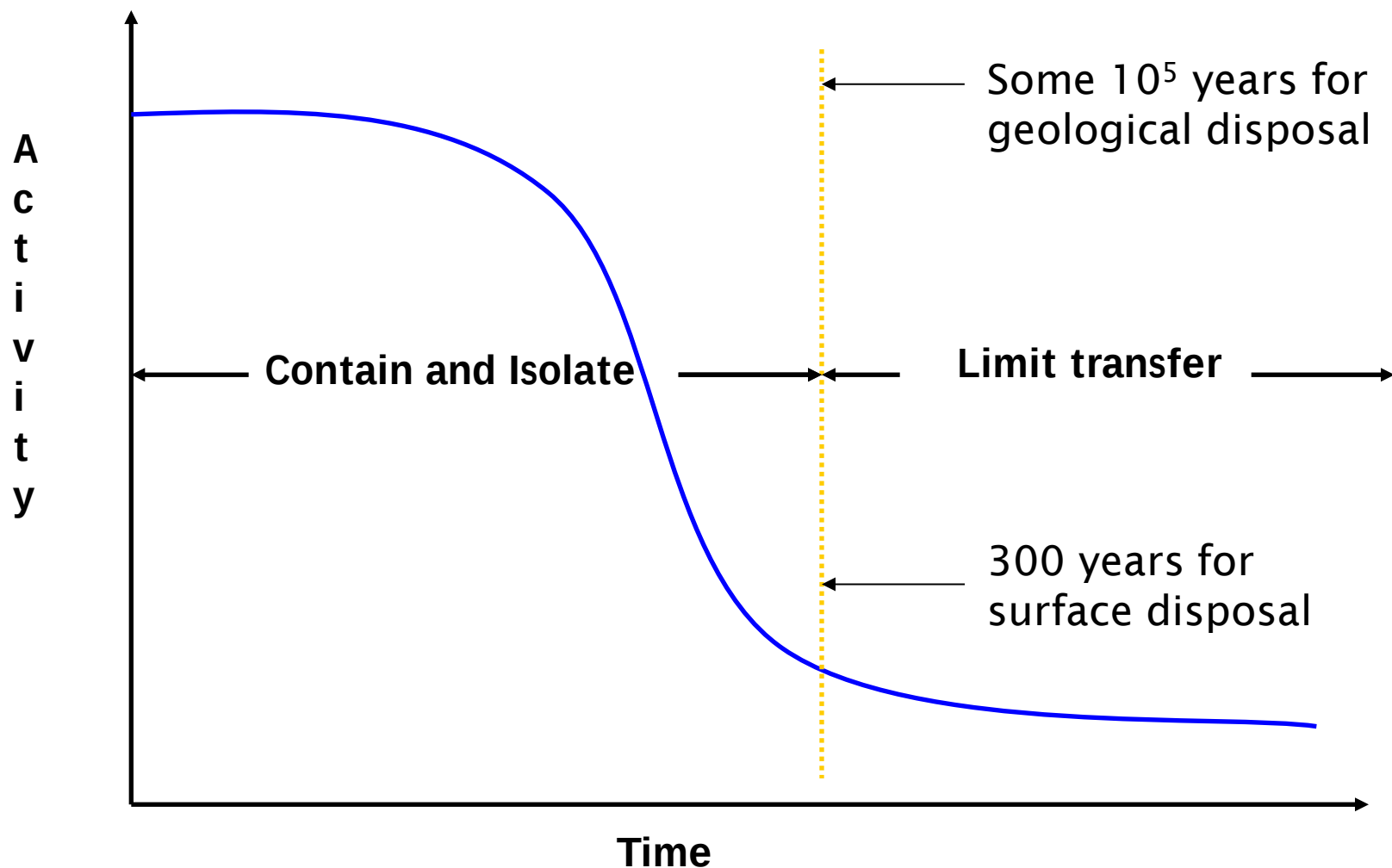
Period ≤ 31 years

Long-lived waste

Period > 31 years

Very low level	Recycling or disposal of waste from dismantling operations (CSTFA in France since 2003)	
Low level	Waste mainly from day-to-day operation of NPPs (CSFMA in France since 1992)	Graphite, radium-bearing waste (Studies stage in France)
Intermediate level		
High level	Waste from SF reprocessing plants (Geological disposal facility in France to be commissioned in 2025) HL vitrified waste : after reprocessing & cooling,	

- ❑ Protection of human beings and the environment
- ❑ Immediate and long term protection



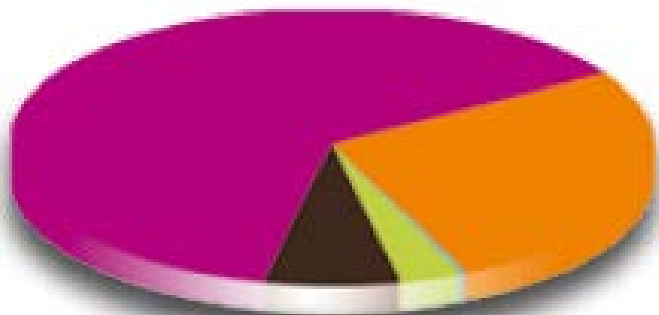
Radioactive Waste National Inventory

Last Edition published in July 2012



Waste volume (m ³)	Waste at end- 2010	Forecast end- 2020	Forecast end- 2030
HLW	2,700	4,000	5,400
ILW-LL	41,000	45,000	49,000
LLW-LL	87,000	89,000	133,000
LILW-SL	830,000	1,000,000	1,200,000
VLLW	360,000	750,000	1,300,000
Total	~1,320,000	~1,900,000	~2,700,000

Distribution of the volume



HL	0,2 %
IL-LL	3,1 %
LL-LL	6,6 %
LIL-SL	62,8 %
VLL	27,3 %

Distribution of the level of activity



HL: $\sim 2 \times 10^{20}$ Bq	96,8 %
IL-LL: $\sim 5 \times 10^{18}$ Bq	3,2 %
Other: $\sim 10^{14}$ Bq	< 0,01 %

Centre de stockage de la Manche, LIL-SL waste



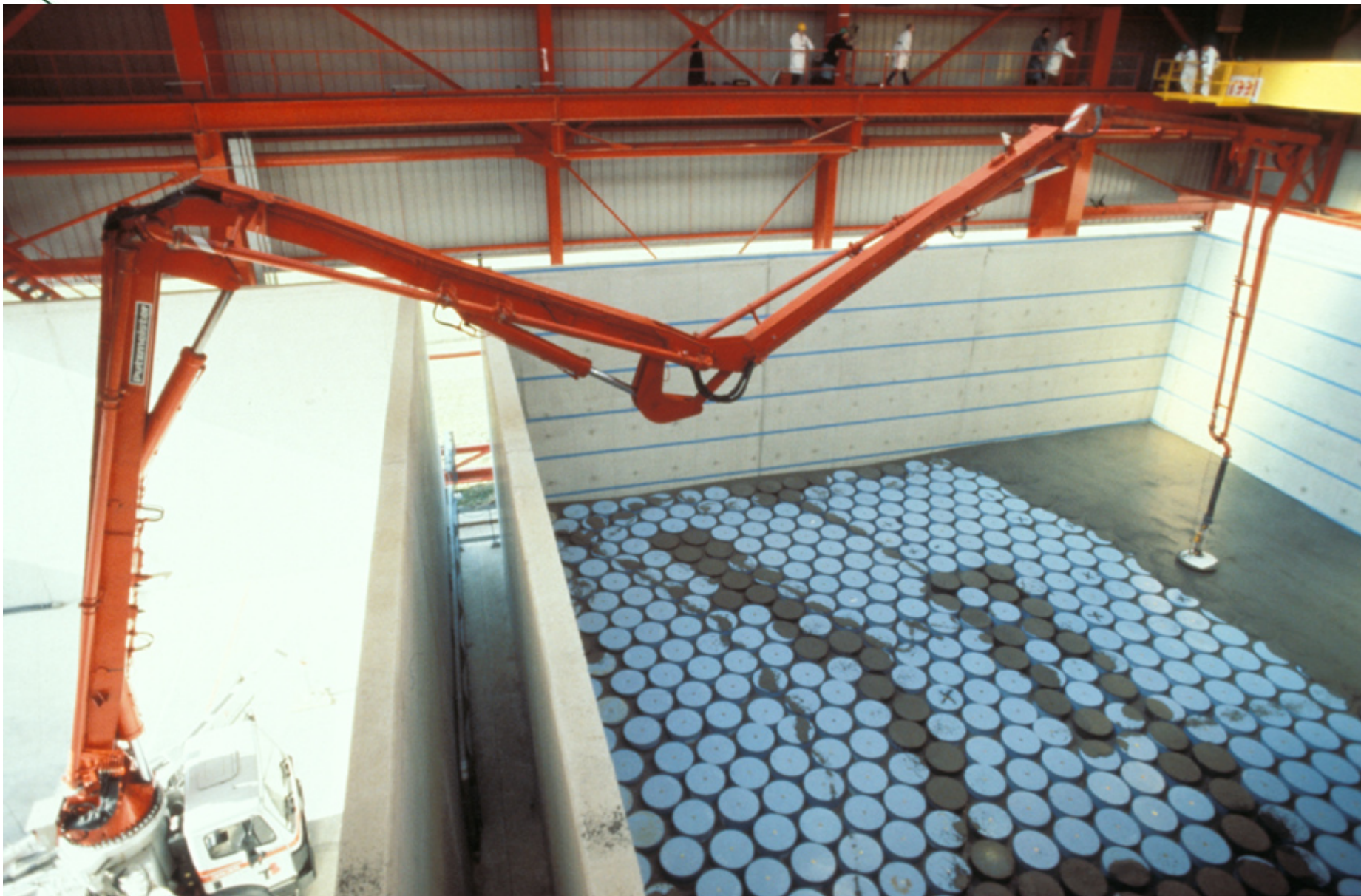
Centre de stockage de l'Aube, LIL-SL waste





Centre de stockage de l'Aube, LIL-SL waste







Centre de Stockage de l'Aube, VLL waste









Centre de Stockage de l'Aube, VLL waste



Centre de Stockage de l'Aube, VLL waste





Centre de Stockage de l'Aube, VLL waste



The Cigéo Project

(*Centre industriel de stockage géologique*)

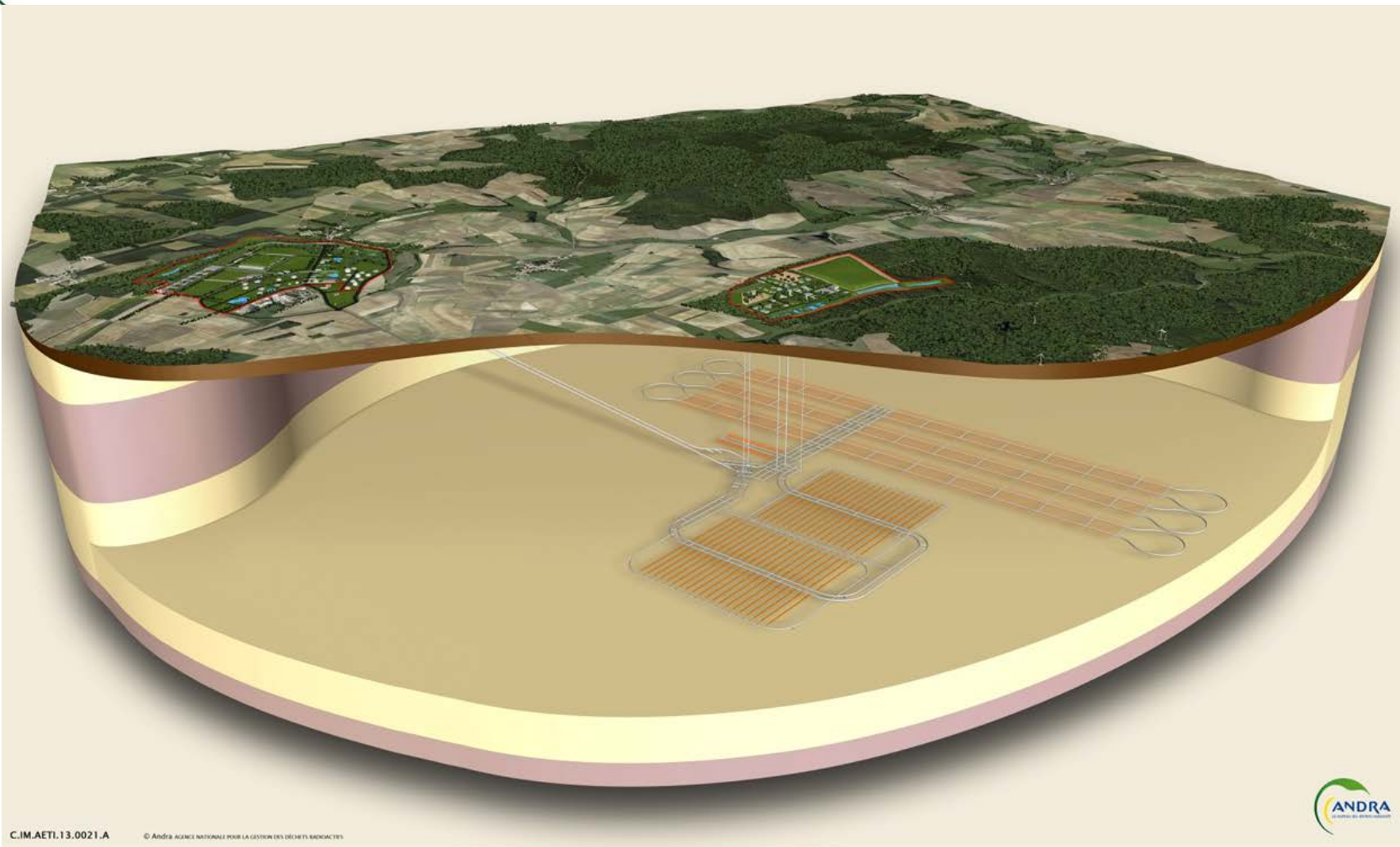
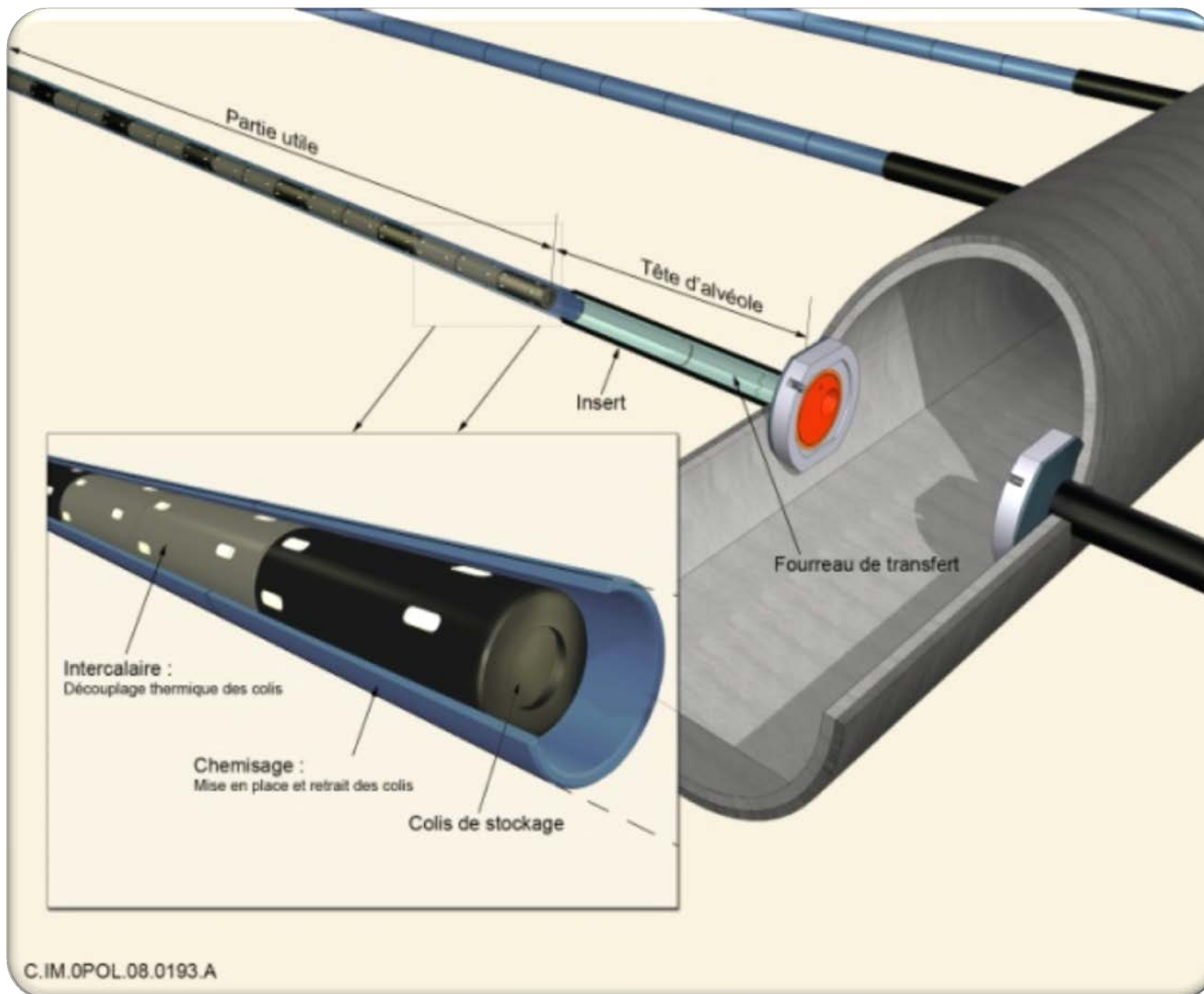


Schéma de principe du stockage à terminaison

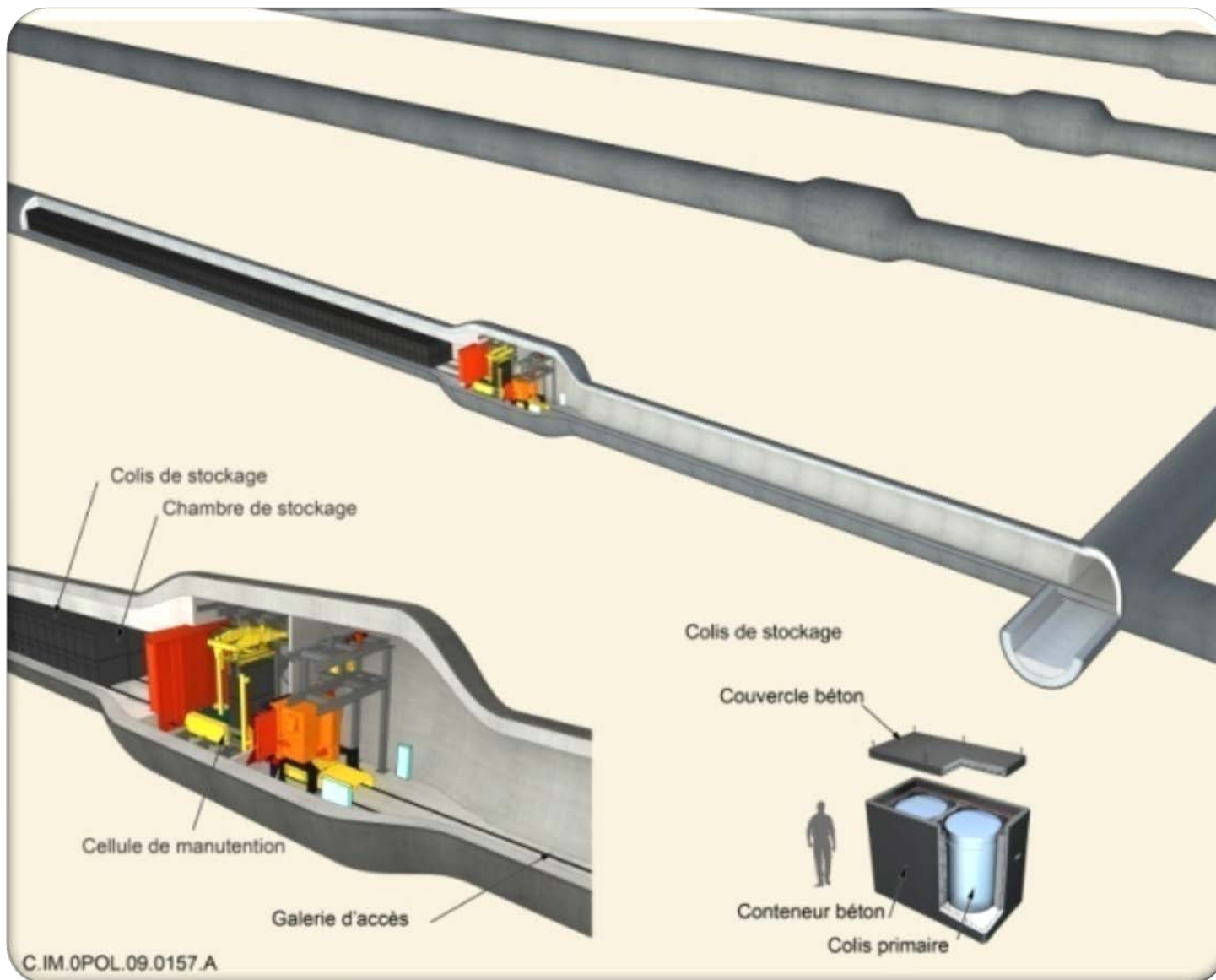
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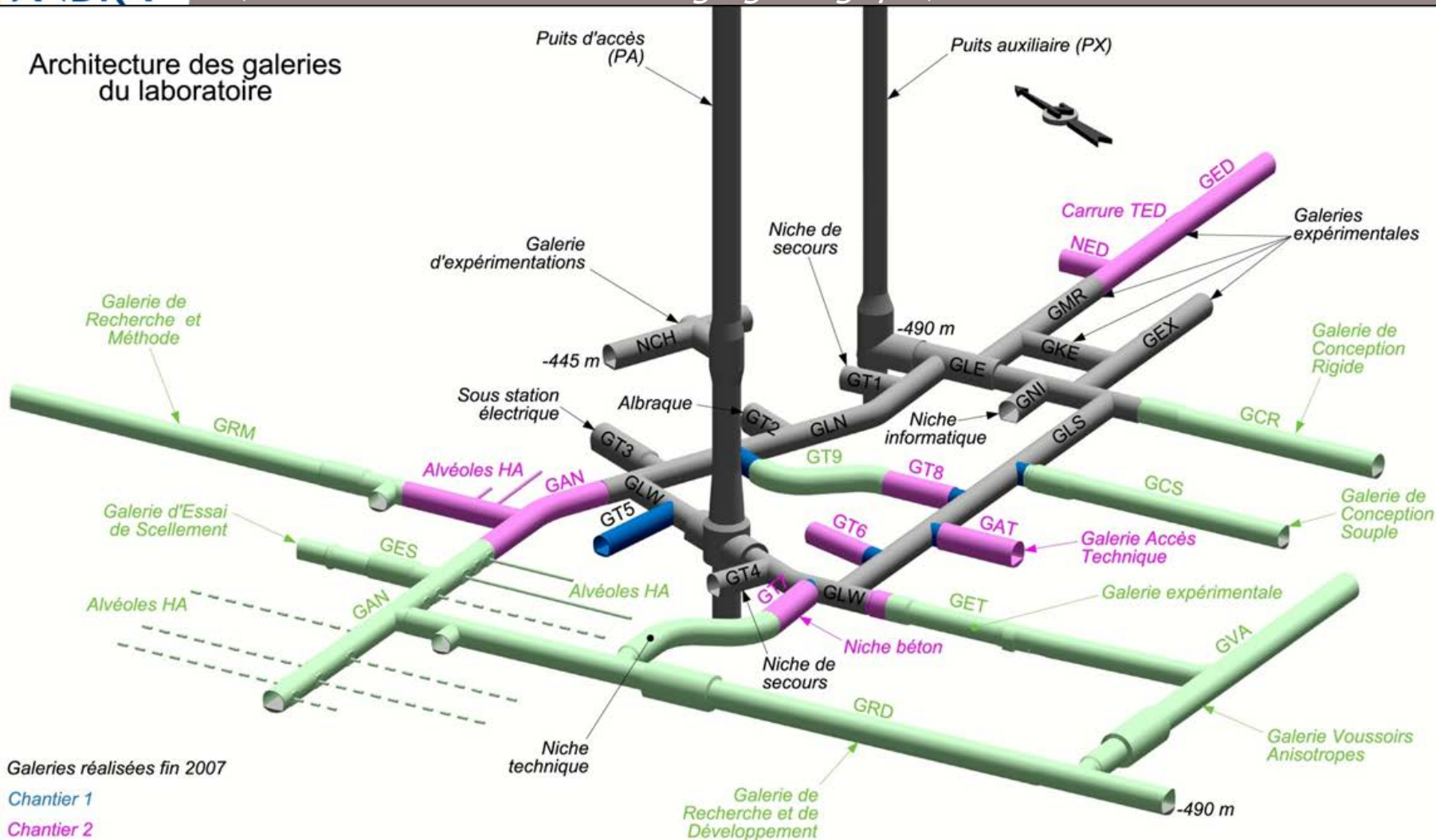
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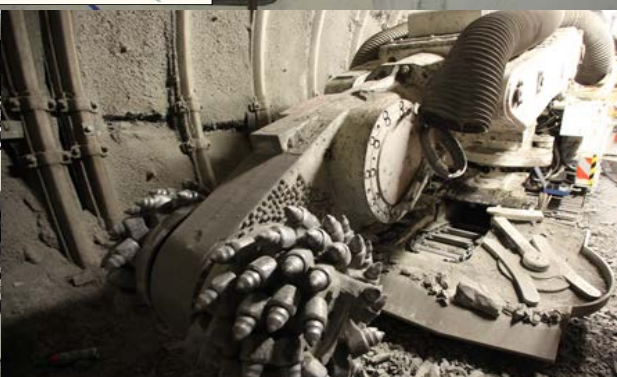
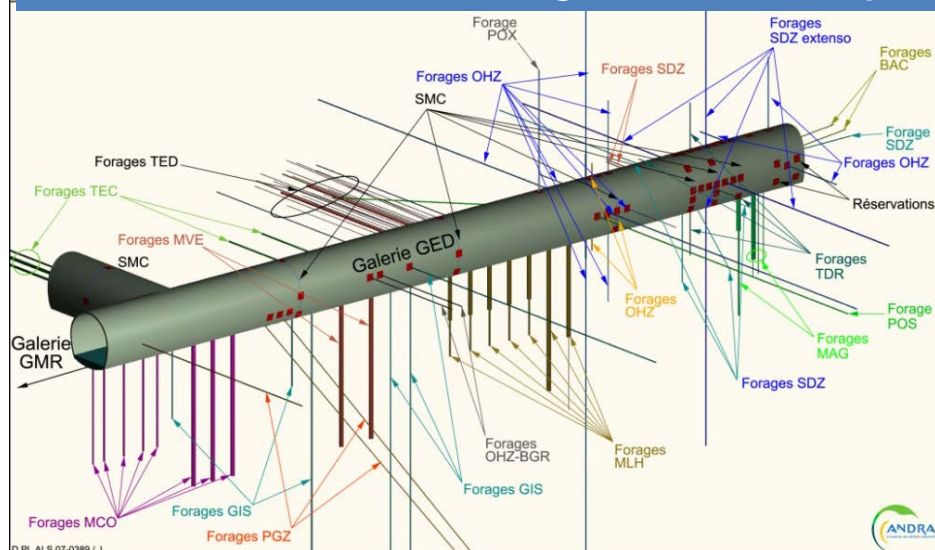




The Cigéo Project

(Centre industriel de stockage géologique)

Underground laboratory R&D programmes and operations



Characterization

Drift-opening test

HLW-cell excavation test

- Inventory of radioactive waste and management plan
- A disposal solution suited to the level of risk linked to each type of waste
- Disposal solutions exist for all types of waste, are already operated or being commissioned
- A strong policy and approach on communication, integration and dialogue to support the development of its disposal facilities was developed by Andra
- But overall, general support is needed at the right level