

ANDRA 'S RESPONSIBILITIES

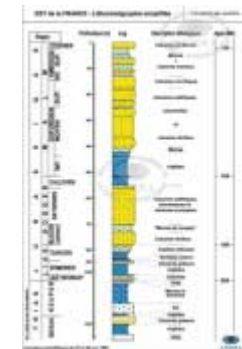
Industry

Design, construction and operation of disposal facilities



Research

Feasibility of an underground repository for high level and long lived waste (30th december 1991 law)



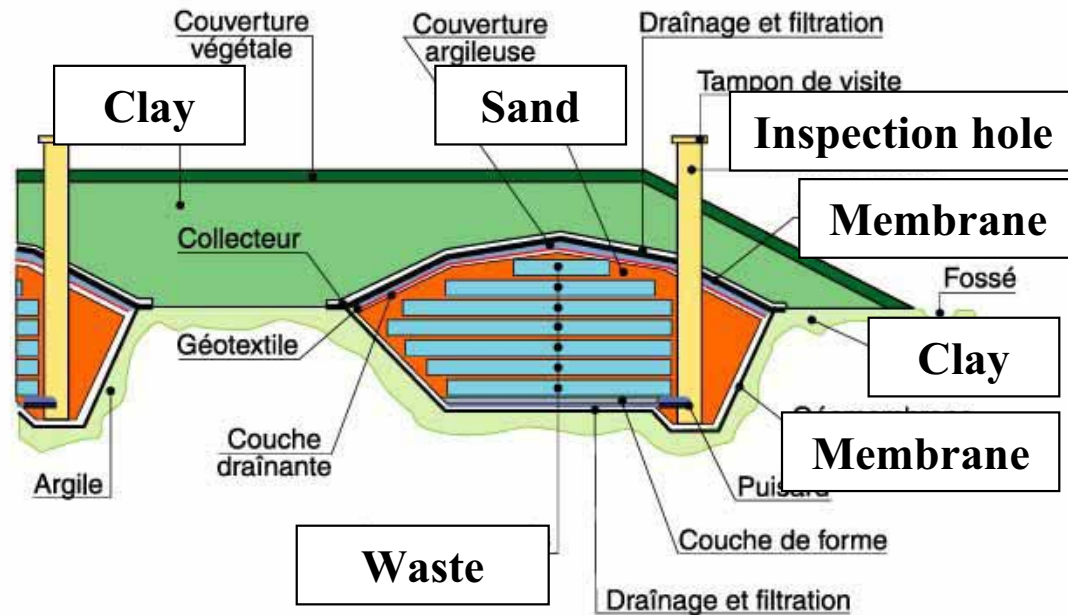
Information

Situation of radioactive waste in France



VERY LOW LEVEL WASTE DISPOSAL FACILITY DESIGN

Cross section of a disposal cell



An institutional control period of 30 years

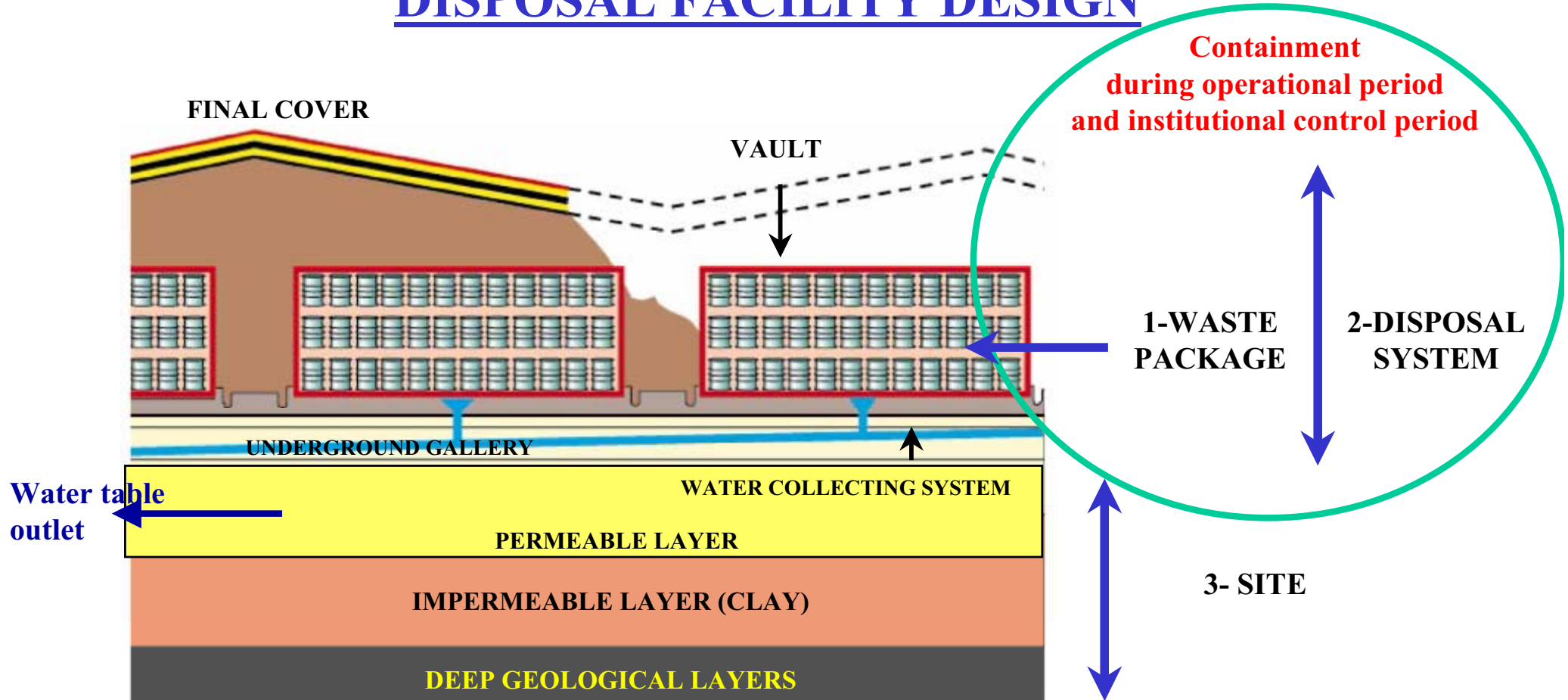
MORVILLIERS VERY LOW LEVEL WASTE DISPOSAL FACILITY



MORVILLIERS VERY LOW LEVEL WASTE DISPOSAL FACILITY



LOW AND INTERMEDIATE LEVEL SHORT LIVED WASTE DISPOSAL FACILITY DESIGN



CENTRE DE LA MANCHE TUMULUS DISPOSAL



CENTRE DE LA MANCHE GENERAL VIEW



CENTRE DE L'AUBE DISPOSAL FACILITY

Capacity (1989 order of creation):

1,000,000 m³ waste packages

4,000 TBq H³

400,000 TBq Co60

40,000 TBq Sr90

200,000 TBq Cs137

40,000 TBq Ni63

750 TBq alpha emitters
(after 300 years)

Start up : 1992



WASTE PACKAGES



Packages with
long duration envelope

Packages with
short duration envelope



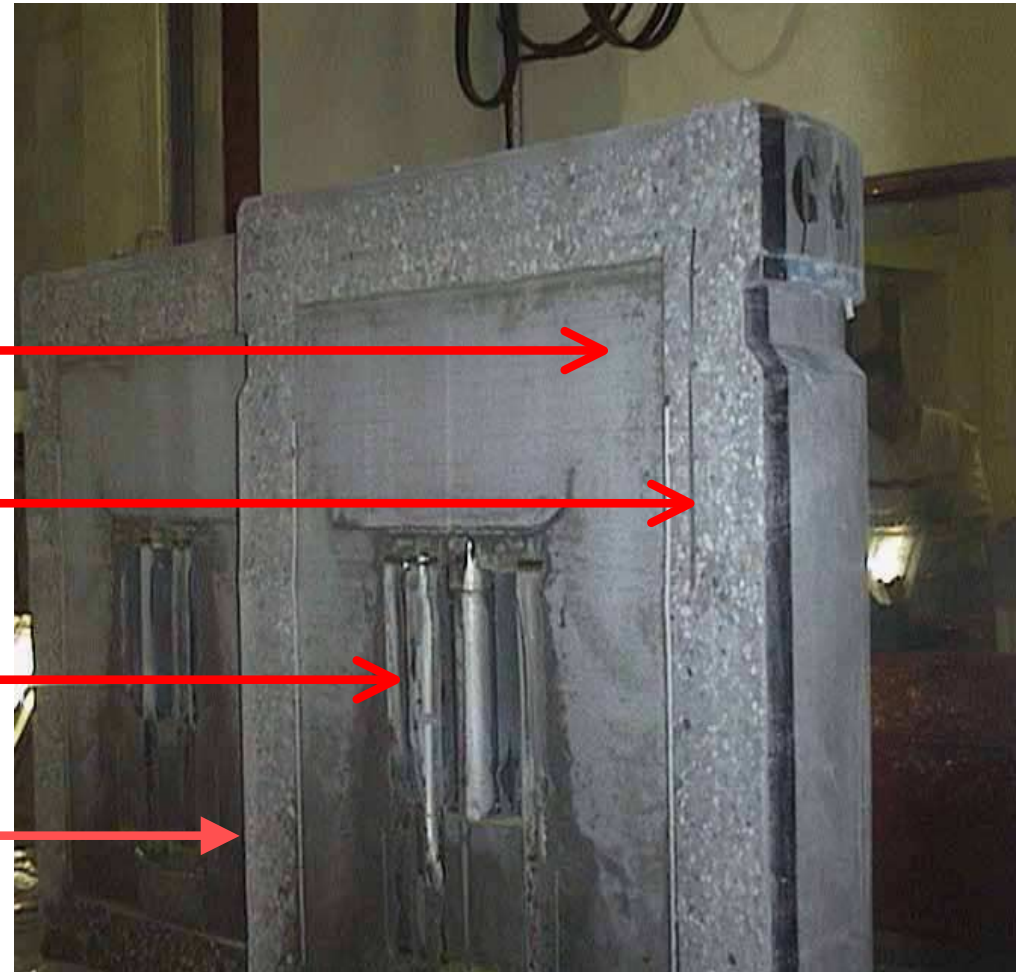
SAFETY FUNCTIONS AND ACCEPTANCE CRITERIA FOR WASTE PACKAGES

Containment properties
(diffusion coefficient, leaching rate)

Durability of the envelope

Activity limitation

Radiation protection
(dose rate, surface contamination)



DISPOSAL STRUCTURES (operation)

Protection
against
rainwater

Construction
above the
water table

An underground
separative water
collection
system



DISPOSAL STRUCTURES

Vault back filling



ENVIRONMENTAL MONITORING

Radiological and non radiological monitoring



WATER MONITORING
(Surface and ground water)

AIR MONITORING

DOSIMETRY

SEDIMENT SAMPLING

VEGETATION SAMPLING

MILK SAMPLING

CHEMICAL SAMPLING AND ANALYSIS
Purification plant release

Physico-chemical water monitoring
(surface and ground water)

MONITORING OF THE ECOLOGY
Freshwater environment
(aquatic vegetation and hydro-biology)

TERRESTRIAL ENVIRONMENT
Fauna, flora and forest growth

PHONIC AND VIBRATION MONITORING



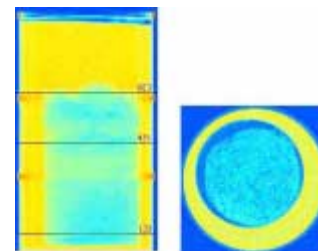
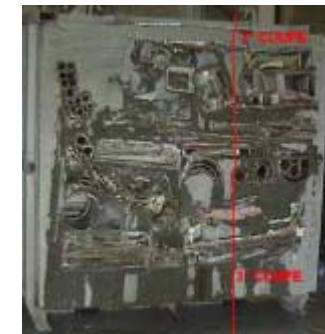
WASTE PACKAGES QUALITY SURVEILLANCE

Computer check on generator's declarations of waste packages characteristics

Control of packages at delivery

Process/product audits in the generator's facility

Destructive and non destructive tests



FEASIBILITY STUDIES OF GEOLOGICAL DISPOSAL

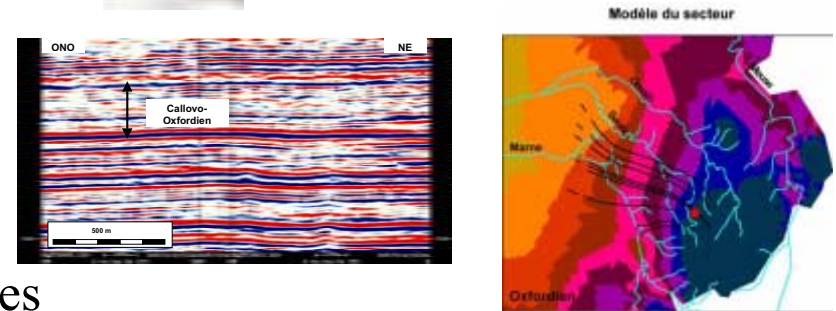
Waste packages :

content
containment properties



Geology

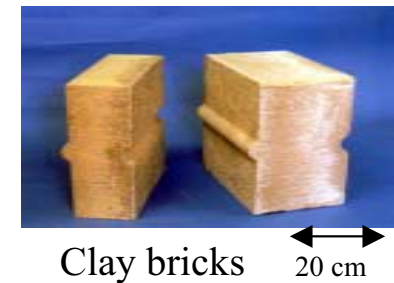
containment properties
mechanical behaviour
hydro-geology



Materials for waste conditioning and disposal structures
long term behaviour

Biosphere

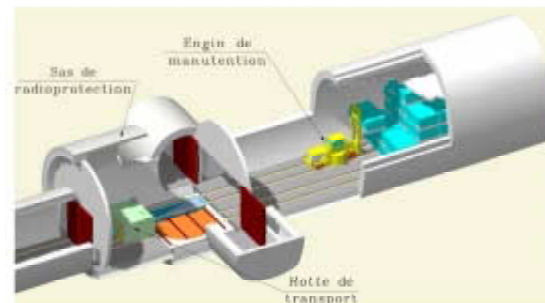
transfer pathways



Disposal design

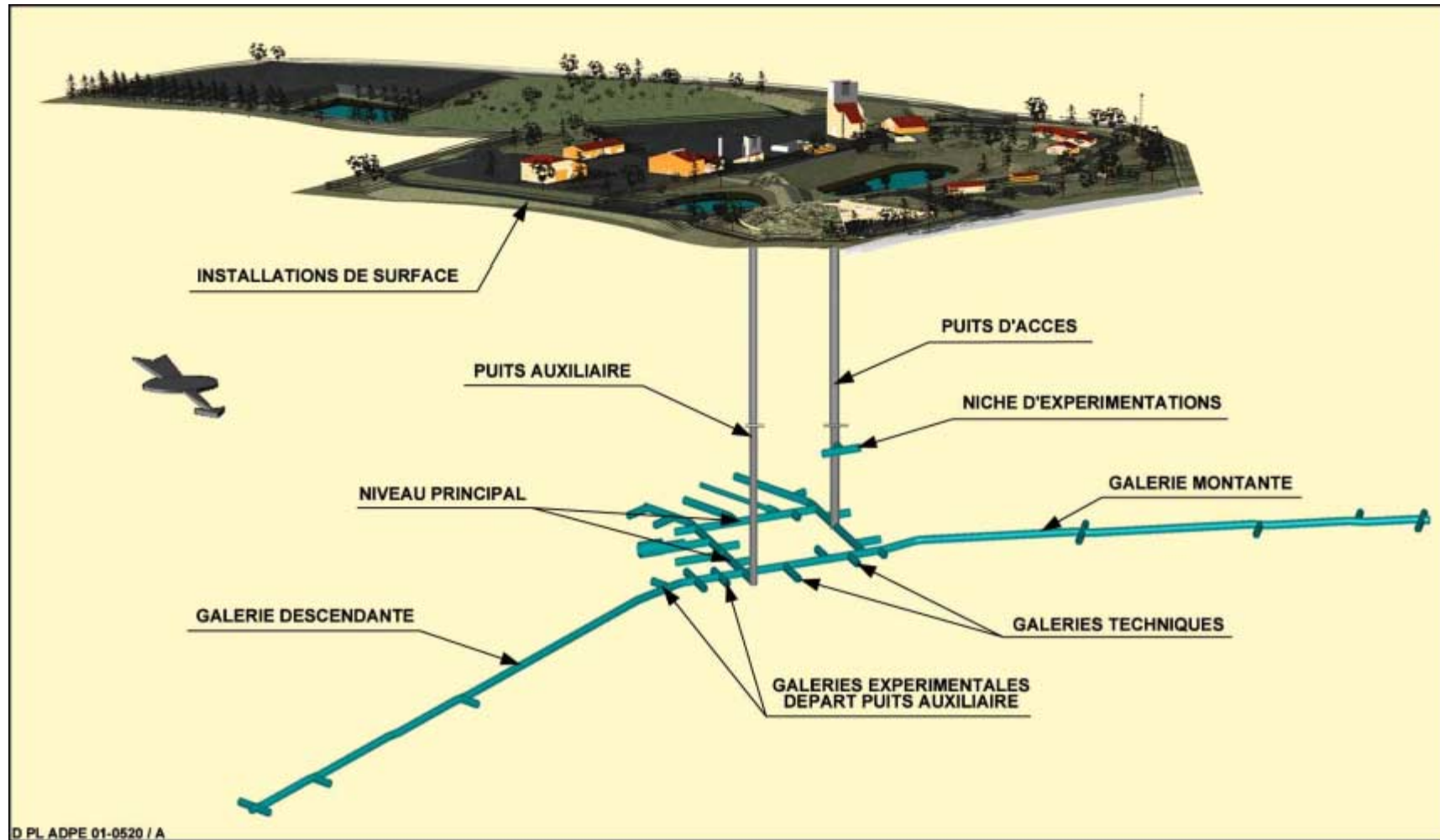
Retrievability

Safety assessment



Disposal design

MEUSE-HAUTE MARNE UNDERGROUND RESEARCH LABORATORY



CONCLUSION

35 years of experience of operating disposal facilities

Centre de la Manche 1969-1994

Centre de l 'Aube : 1992-

Centre de Morvilliers: 2003-

Operation includes :

waste acceptance process

waste packages quality monitoring

environmental monitoring

Closure of disposal facilities, institutional control period

Scientific and technical experience

Siting

Conceptual design

Safety assessment

Waste acceptance criteria