SEPARATION OF **ACTINIDES**

(SAFETY STUDY)

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OBJECTIVE

To evaluate the influence on the radiological consequences associated to a "deep" disposal (total dose equivalent) of a reduction of 99% of the quantity of actinides present in the disposal.

EVALUATIONS CHARACTERISTICS

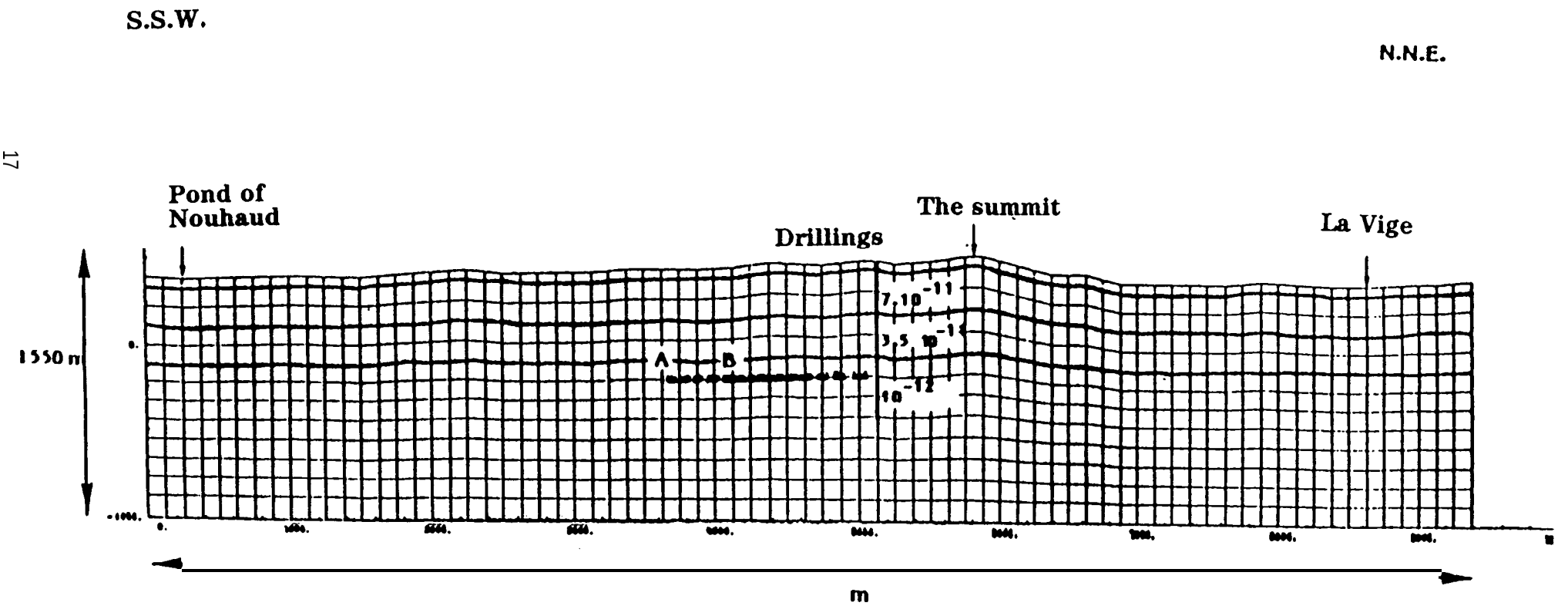
- Normal evolution scenario of the disposal

  Disposal of vitrified wastes produced by the reprocessing of 48 000t of heavy metal (30 years of operation of a 60GWe electronuclear program)

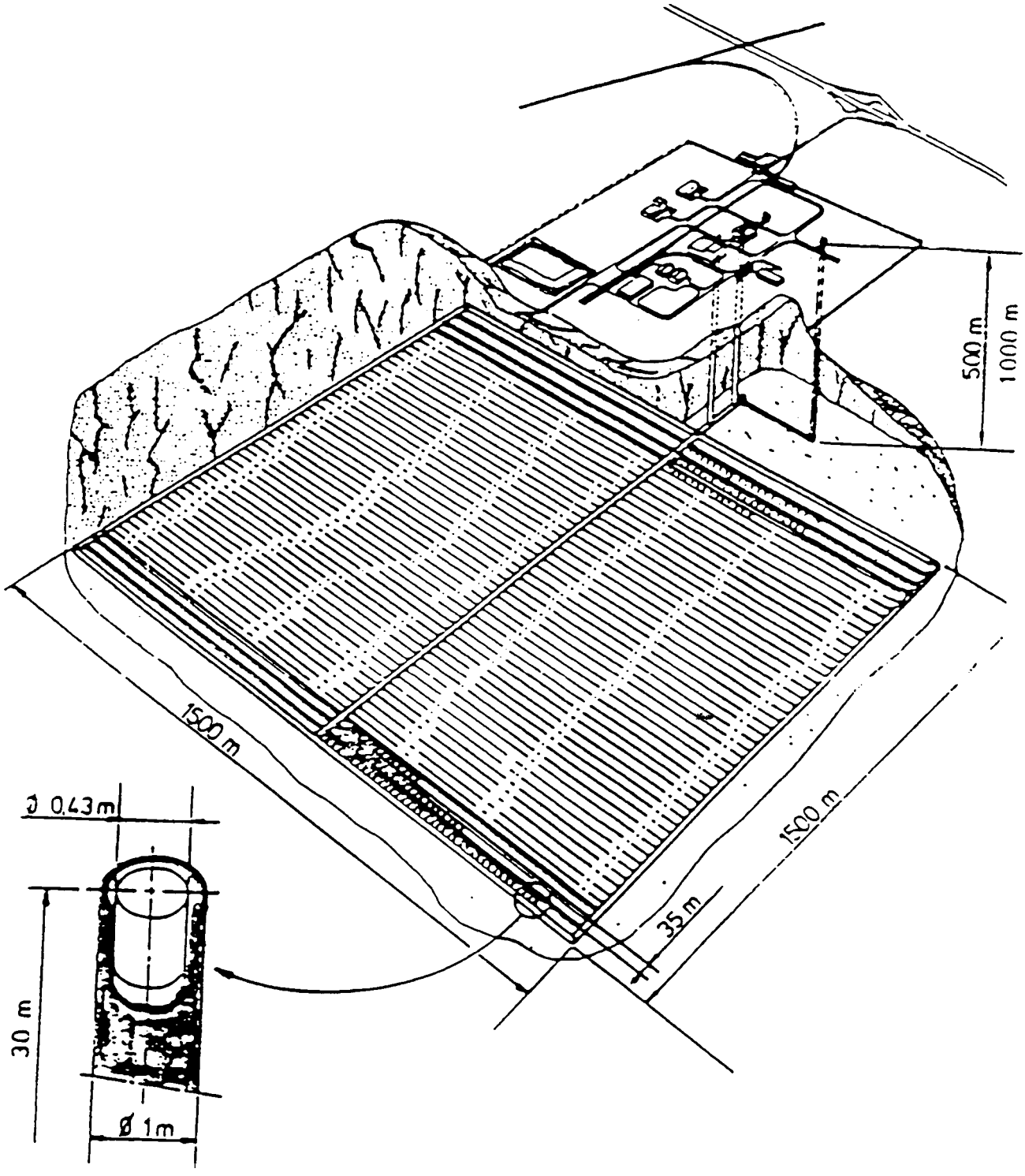
- Hypothetical studied site: granitic formation of AURIAT (cf. PAGIS)

- Calculations carried out with the MELODIE code

REPRESENTATION OF THE AURIAT SITE



DISPOSAL OF GLASS CONTAINERS
preliminary cooling : 30 years
1800 weUs



PARAMETER	MINIMUM VALUE	MAXIMUM VALUE	REFERENCE VALUE
K1 (m/year)	2.10-4	2.10^{-2}	10^{-3}
K3 (m/year)	10^{-6}	10^{-4}	3.15.10-5
'Np	1	100	11
R_U	1	100	7
R_{Th}	1	2500	180
Co_{Np} (mole/l)	10^{-8}	5.50.10-6	10^{-7}
Co_U (mole/l)	10^{-7}	10^{-4}	10^{-5}

RESULTS

DETERMINISTIC CALCULATIONS

with or without separation

- no significant release before # 10^5 years
- low maxima [(<10^{-6}Sv/year)] and
- much below the limits recommended by ICRP

the ratio of maxima without/with separation (# 2) does not allow to conclude that there is a significant influence of the separation.

SENSITIVITY ANALYSIS

It allowed to confirm the above conclusion, taking into account the uncertainties affecting the main parameters :

- **volubility limits**
- **permeabilities**
- **retardation factors**

TOTAL DOSE OF ACTINIDES (OUTLET 2)