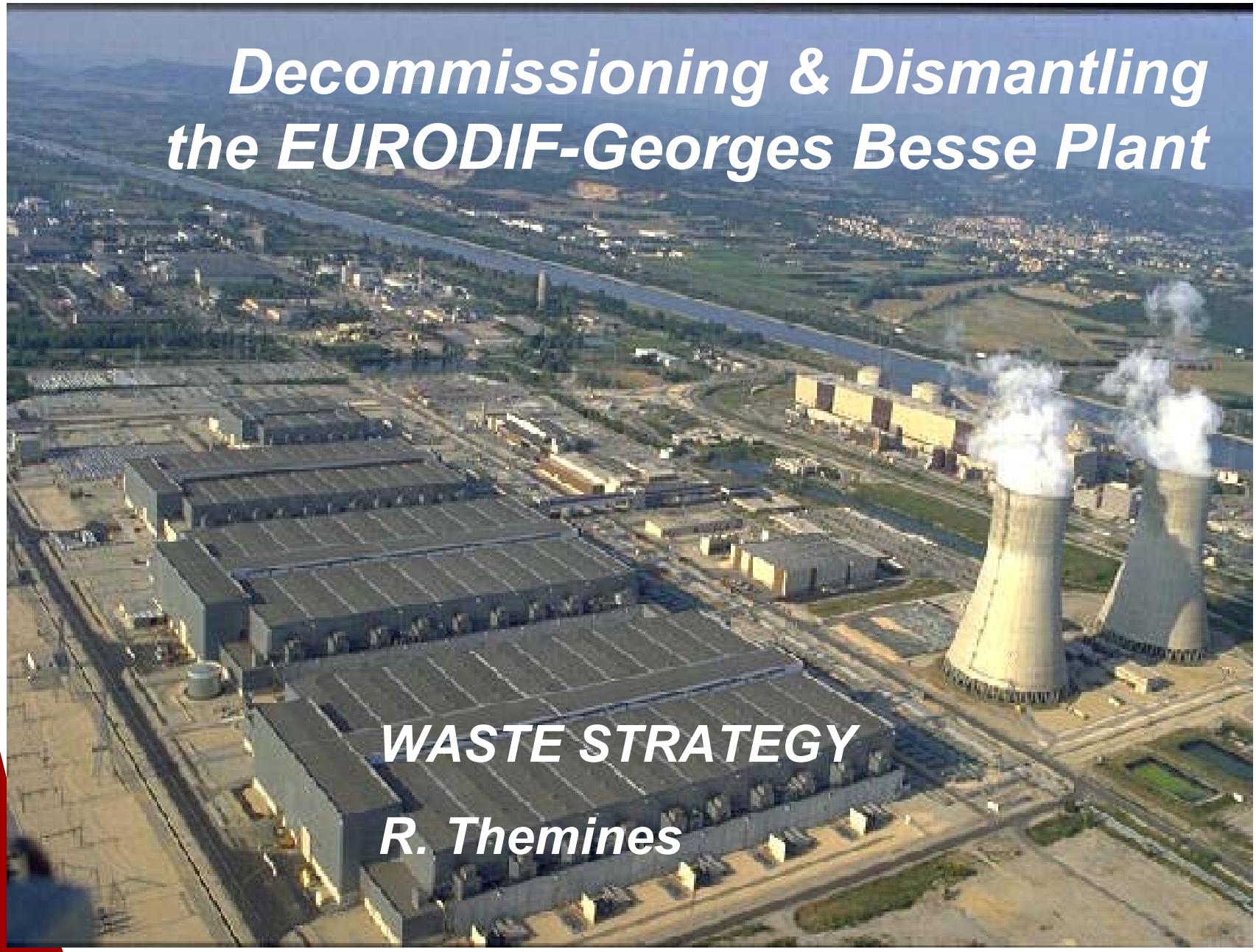
Decommissioning & Dismantling the EURODIF-Georges Besse Plant



WASTE STRATEGY

R. Themines

Summary

- *The position of the safety authorities*
- *Nuclear waste management*
  - *Generalities*
  - *Nuclear waste recycling in France today*
- *The decommissioning of Georges Besse plant*
  - *Basic design studies and selection of a baseline strategy*
- *Decontamination by melting and recycling in other nuclear facilities*

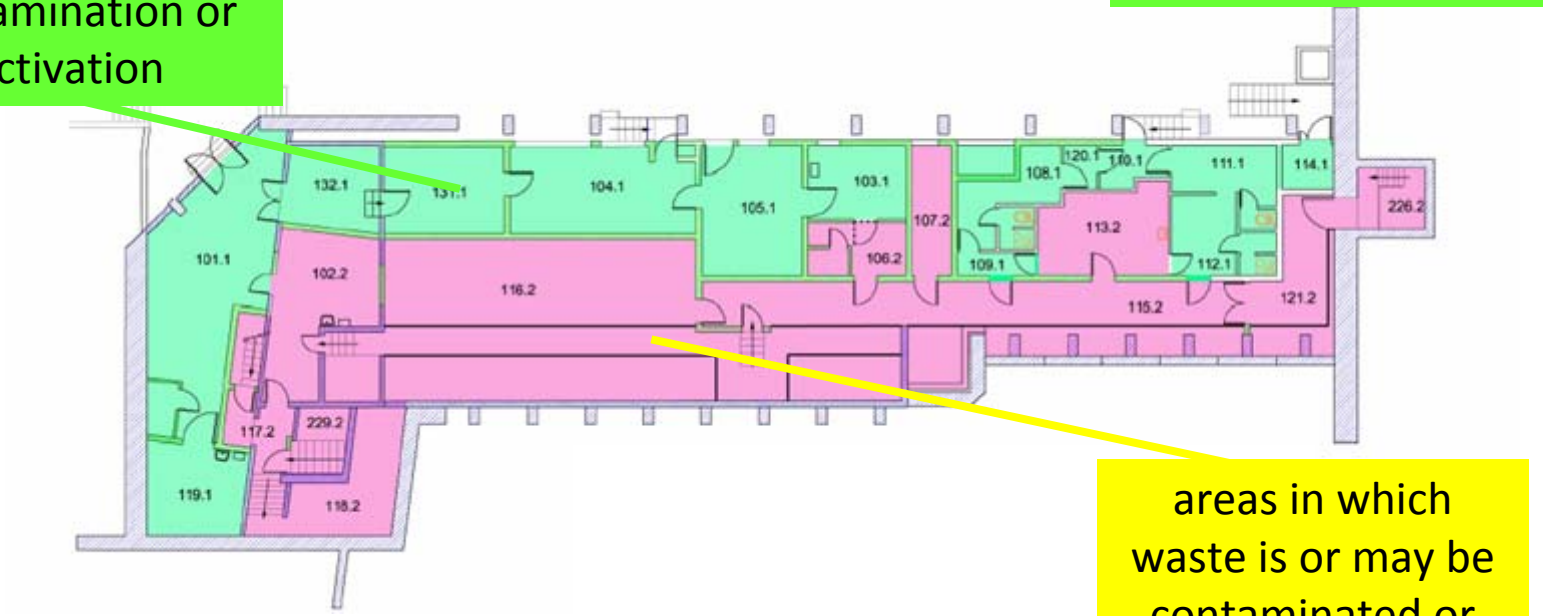
The Position of the Safety Authorities

- **Key arguments against this practice :**
  - **It is difficult to guarantee that Very Low Levels of Activity can be reached for large recycling projects**
  - **Ethical and public policy considerations make agreement on the unrestricted reuse of VLLA materials very difficult to obtain**
- **To manage nuclear waste the government has published the National Management Plan for Radioactive Material and Waste (PNGMDR)**

The Nuclear Waste Management : Zoning

areas where there is no possibility of contamination or activation

Conventional waste



areas in which waste is or may be contaminated or activated

Nuclear waste

Nuclear Waste Recycling in France Today

- **Nowadays in France there is only one possibility for nuclear waste recycling : the decontamination and the reuse of lead**
  - **Contaminated lead is sent to the Marcoule treatment plant**
  - **The lead is decontaminated by melting in a furnace**
  - **Two components are produced : slag and ingots**
  - **The ingots are sent to d'Huart industries in Marseille to produce new equipment**
  - **The recycled lead equipment is then sent to another nuclear plant and the cycle begins again**

DECOMMISSIONING The Georges Besse Plant

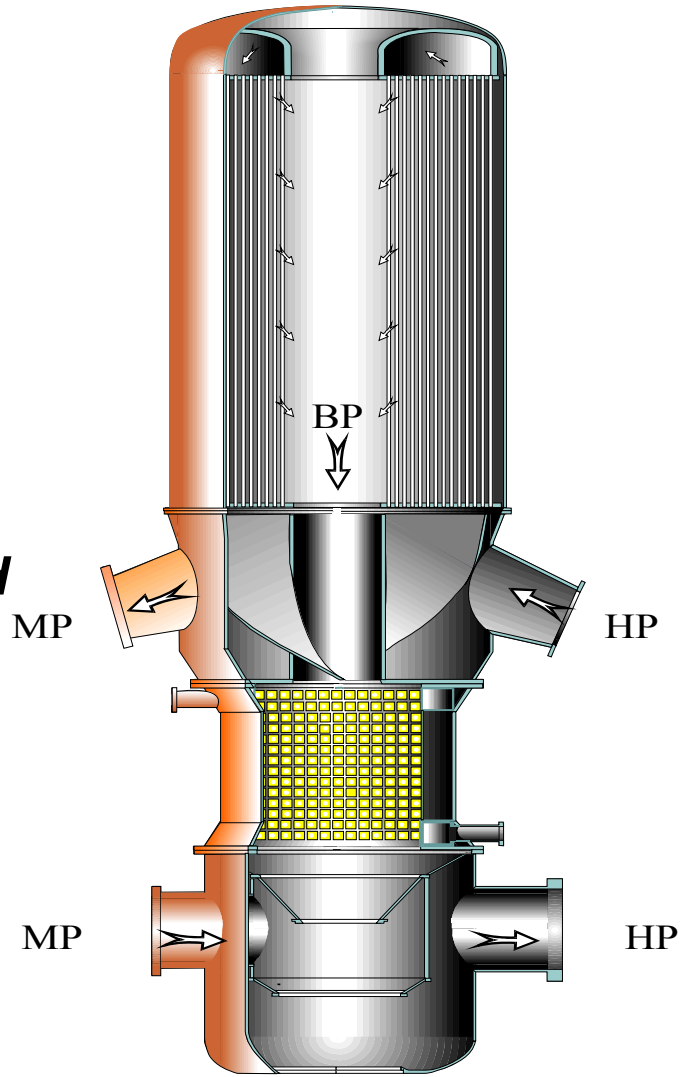
Eurodif Georges Besse Plant : a set of diffusion stages
4 buildings, 1400 diffusion stages gathered into 70 sets of 20
190 000 square meters

EURODIF Georges Besse Plant

- *Maximum weight 88 metric tons*
- *28 000 metric tons of barriers*
- *Dismantling is expected to produce a mass:*

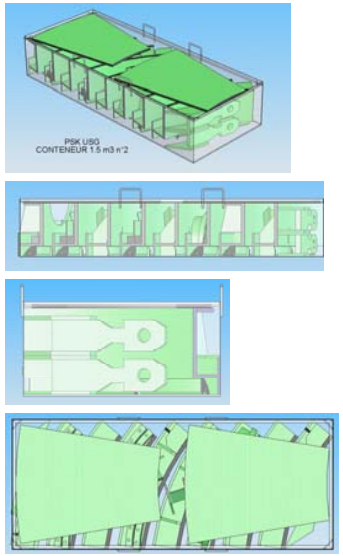
- 150 000 metric tons of contaminated waste

- 50 000 metric tons of non-process waste



Waste Strategy :Basic Design Studies

- ***Storage at ANDRA (VLLA) center***



The cascade equipment is cut and packaged in order to comply with ANDRA specifications

- ***The volume of waste from DGB would take 25% of ANDRA'S VLLA storage capacity***

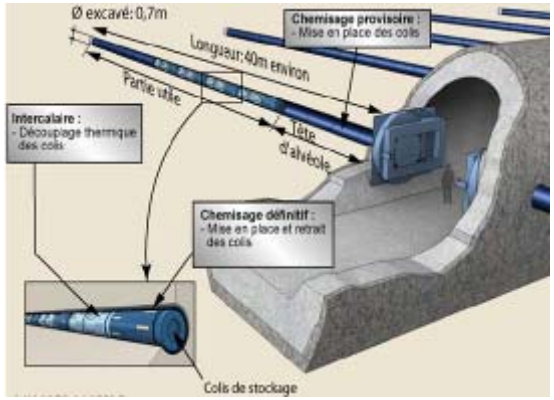
Baseline Strategy- Second Scenario

- ***Decontamination by melting and recycling steel in the nuclear Industry***

- ***In keeping with AREVA'S committment to sustainable development, AREVA has chosen to develop an alternative strategy for nuclear waste disposal : recycling by melting***

Steel Recycling : The Cycle

Nuclear facilities



Steel melting furnace

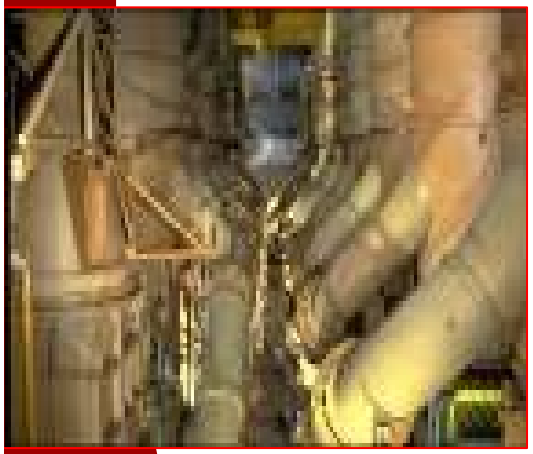
Decontaminated Steel

Steel melting furnace industrial partners

End products :

Waste Strategy – Melting and Recycling

Decontamination by melting



slag

ANDRA VLLA

Waste Strategy – Melting and Recycling

- **Metal containers**

- **Steel reinforcement bars**

  - **Refined steel to be used as material for nuclear plants**

Waste Strategy – Melting Tests

Pellets in the furnace
Average activty : 10 bq/g

Melting operation

Separation of slag

Taking samples for analys
Average contamination : < 0,05 bq/g

Recycling by Melting –Authorization Process

- *Remaining steps required to obtain authorization are :*
  - *Complete safety studies*
  - *Identify industrial partners*
  - *Present results to the regional safety authorities (DRIRE) for review :*
    - *Public inquiry*
    - *Public meeting*
- *The delay to complete studies and obtain authorization is estimated at 2 - 3 years*

Waste Strategy –Recycling and Sustainable Development

To conclude

- *ANDRA, AREVA, CEA and EDF have agreed to develop a common recycling strategy*
- *Studies are being performed to assess other uses of the melting process*
  - *Copper*
  - *Stainless steel*
  - *Aluminium*