French regulatory procedures for decommissioning

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Contents

1 French Nuclear Safety authorities Organisation
2 Licensing Procedures for dismantling
3 Regulatory Procedures for the dismantling of Chooz A
1 French Safety Authority Organisation

- Independent administrative authority set up in 2006 by TSN law (law concerning Nuclear Transparency and Safety)
- Its aim: to provide efficient, impartial, legitimate and credible nuclear regulation
- Its core duty:
  - Regulations of a diversity of activities and installations,
  - Inspections,
  - Information.
- A few key figures:
  - More than 430 staff (half of them in the 11 regional divisions),
  - 245 inspectors distributed among the regional division and the departments,
  - A total budget of 142 million euros,
  - more than 870 inspections per year on nuclear installations and radioactive material transport.
NSA Organisation (1/2)

- **National level**:
  - Several subdivisions
  - DRC for dismantling

- **Local level**

  Local divisions, in charge of first level control of nuclear plants

- **NB**: Technical support ensured to French Safety Authority by IRSN

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1. The Bordeaux, Caen and Orléans divisions operate in the Pays-de-la-Loire, Brittany and Ile-de-France regions respectively for BNI supervision only
2. The Paris division operates in Martinique, Guadeloupe, Guyane, Mayotte, Réunion, St-Pierre-et-Miquelon
2 Administrative process for dismantling nuclear facilities

Life of a nuclear plant:
- Divided in 2 stages:
  - Operation (including design and conception)
  - Dismantling,

After the operation stage, 2 steps:
- End of operation
  - Evacuation of radioactive fluids, waste
  - Performed in the framework of the decree of creation of the plant
- Definitive shutdown
  - Preparation of dismantling
  - Performed in the framework of the new decree for dismantling

French licensing procedures for dismantling: only one decree for the whole dismantling of the plant
- Interest for the safety authorities: visibility
- Interest for operators: less licensing procedures
2

Procedure for end of operation

- 3 years before definitive shutdown → letter to the French safety authorities with:
  - Description of the work to be performed
  - Modifications of the organisation on the plant
  - Time schedule
  - Description of the plant at the corresponding state

Procedure for dismantling

- 1 year before definitive shutdown → application delivered to the ministers containing 11 documents among which:
  - Initial state of the plant (before definitive shutdown)
  - Main steps of dismantling
  - Various maps
  - Safety analysis report
  - Description of the plant premises
  - Environmental impact study
  - Operating rules for monitoring and maintenance
2 Administrative process for dismantling nuclear facilities

- The NSA’s role:
  
  Determine whether the technical scenario, the organization and methods adopted by the operator are sufficient to guarantee the safety of the facility in the dismantling process and workers radiation protection.

- Since the TSN law → acceptance audit

  The operator has to communicate certain data relating to the release of radioactive substances to a commission. The public acceptance of the radiological impacts of decommissioning, planned disposal and accidental release will have on the environment is required so that the operator can get its decree.

- Finally, the decree can be delivered

  NB : the NSA can express conditions or recommendations after delivering the decree, which are called “technical prescript”.

Safety license during decommissioning

- Safety license applicable in the facility:
  - Decree for dismantling and NSA’s technical prescrip → written by the NSA
  - Safety Report, Operating Rules for Monitoring and Maintenance, Emergency plan → written by the operator

- These documents need to be the exact reflection of the current state of the facility
  → It has to evolve as the decommissioning goes along (especially the safety report and the ORMM)

- These evolutions:
  - can be on the operator’s initiative: in this case the operator has to submit a file and ask the NSA for a license amendment (art 26 or 31 TSN law) or ask for an internal authorisation (art 27 TSN law)
  - are necessary before significant steps pointed in the decree
  - are necessary at least every 10 years: safety reassessment
EDF internal authorisations system

Organization
- Based upon a commission at national level managed by the engineering centre in charge of all the studies for decommissioning (CIDEN)
- Commission of EDF experts and non-EDF experts, not involved in then operation of the plant
- Files prepared and presented by the project concerned
- Independent analysis of each file performed and presented by an engineer independent from the project management to reinforce independency of commission’s recommendations
- Recommendations proposed by the commission then approved by CIDEN management
- Final authorisation delivered by the operator of the plant after control of the final file taking into account the recommendations of the commission and site interfaces

Validation process
- First organisation proposed by EDF to French nuclear safety authority in April 2002
- Testing period of 18 months
- Discussion with French nuclear safety authority to obtain the approval of the process (February 2004)
- Organisation keeps being upgraded to meet French Nuclear Safety Authority Requirements
2 Safety analysis report for decommissioning

Volume 1: General description of dismantling

1. Presentation of the safety analysis report
2. General description of the plant and site
3. Initial state for dismantling
4. Description of the dismantling
   1) Method for safety analysis
   2) Safety and radioprotection objectives
   3) Identification of the risks
   4) Scenario of the dismantling
   5) Organisation for safety and security of the work
   6) Waste management
5. Description of the new facilities necessary for the dismantling
6. Final state

Volume 2: Nuclear safety demonstration

1. Nuclear safety requirements
2. Safety analysis for each main steps
3. Accidents and radiological releases
4. Radioprotection
5. Quality management
6. Security
Operating rules for monitoring and maintenance

1. Description of the plant
2. Operation Organisation
3. Quality management
4. Operating range of the plant
5. Operating documentation
6. General rules for security
7. Radioprotection management
8. Operation in case of incident / accident
9. Maintenance and periodic testing
3 The example of Chooz A

- Nuclear Operator: head of Chooz B nuclear power plant
- Dismantling decree in 2007
- Final state: EDF’s property

3 main steps for Chooz A dismantling:

1. Partial dismantling and cleaning:
   - Dismantling of auxiliary cavity → internal authorisation was required for this stage
   - Dismantling of reactor cavity → NSA authorisation was required for the disjunction of the primary circuit
   - Partial dismantling of liquid effluents treatment installation → internal authorisation will be required for this stage

2. Monitoring (for a period of time)

3. Final treatment (dismantling of remaining equipment, filling up of the cavities, site restoration)
### Chooz A first step: partial dismantling and cleaning

<table>
<thead>
<tr>
<th>ELEMENTARY OPERATION</th>
<th>CONFINEMENT</th>
<th>MAIN RISKS</th>
<th>MEASURES</th>
<th>ACCIDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECONTAMINATION</td>
<td>REACTOR CAVITY</td>
<td>INTERNAL FLOODING</td>
<td>RETENTION CHEMICAL SPECIFICATIONS</td>
<td>LEAK ON CIRCUIT</td>
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<tr>
<td></td>
<td></td>
<td>FIRE, EXPLOSION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISMANTLING OF REACTOR CAVITY</td>
<td>REACTOR CAVITY</td>
<td>DROP OF LARGE COMPONENT</td>
<td>RELIABILITY LIMITATION OF ELEVATION</td>
<td>DROP OF REACTOR VESSEL, SG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DROP OF CONTAINER WITH SOURCE RODS</td>
<td>DETECTION EXTINGUISHER</td>
<td>FIRE (CUTTING OF STEAM GENERATOR)</td>
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<td>FIRE</td>
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<td>EXPLOSION (ZIRCALOY)</td>
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