
EDF presentation – monitoring safety for a fleet of 58 units

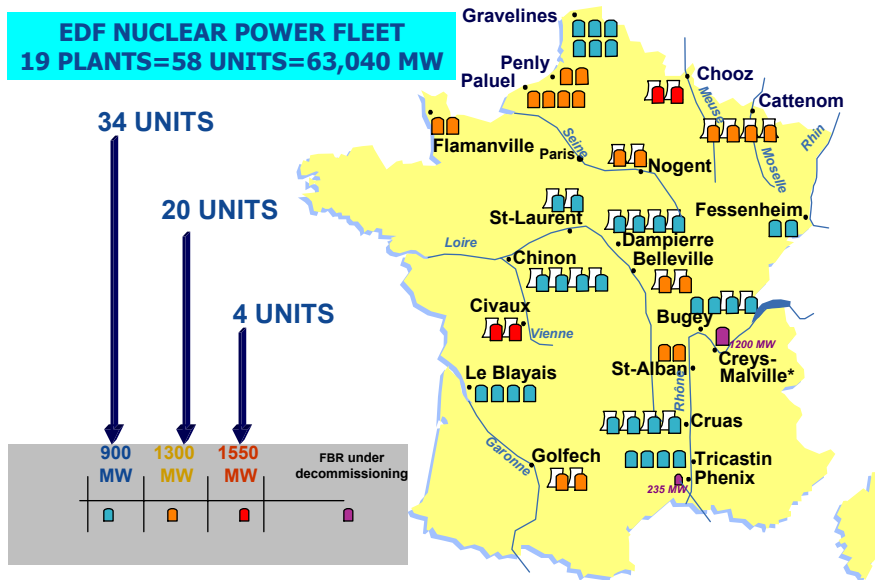
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Abstract:

This document describes the monitoring of safety exerted by the Director of NPP Operations over EDF's Nuclear Plants. The System set up is used to assess safety performance and the quality of safety management. The assessment of performance alone is not enough to evaluate the durability of results and the dynamic of progress, which are essential for a good level of safety. Indicators are used to assess safety performance. Safety management is assessed with other criteria, especially results of Nuclear Inspectorate. Each site is placed in relation to the others. NPP operations management expects to create a progress dynamic out of this comparison.

1 EDF'S NUCLEAR POWER FLEET: A STANDARDISED FLEET IN TERMS OF REACTOR TYPES



EDF's nuclear fleet is made up of three standard reactor types. Accordingly, EDF has extensive, centralised engineering resources to maintain and make the most out of this standardisation as well as give the nuclear plants the support they require. The operation of the Nuclear Fleet is the responsibility of the Nuclear Production Division (DPN).

2 MANAGEMENT POLICY

The DPN has a quality management system based on the principles of EFQM. Processes, including the following, have been defined: Safety, environment, radiological protection, production, HR management and the budget.

At central level, a system for the monitoring and assessment of EDF nuclear plants has been set up for each of these processes. This system is intended to measure the performance of plants (mainly on the basis of indicators), but also to assess managerial dynamics through a system for the weighting of qualitative and quantitative data.

3 SAFETY MANAGEMENT

EDF's priority is to ensure and improve safety on an on-going basis:

- questions concerning safety should be given the priority they deserve in view of their importance. The DPN makes research into Excellence in terms of safety its number 1 priority.
- On-going improvement is part of the safety culture. There is an obligation to make progress in an increasingly severe competitive environment. This is one of the main factors which should improve the competitiveness of the Company.
- Safety management has a special place within EDF management; it should be exemplary and drive other Corporate performances upward.

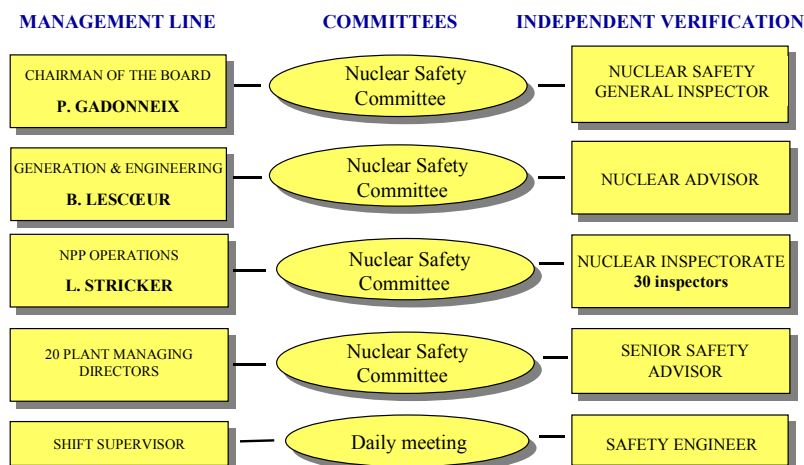
In particular, three safety management principles have been defined. They drive performance and are references for central units and nuclear plants:

- on-going improvement to ensure customer satisfaction,
- leadership and consistent vision,
- the involvement of personnel.

4 MONITORING THE SAFETY OF EDF'S NUCLEAR PLANTS BY THE DIRECTOR OF THE DPN – THE RESOURCES USED

4.1 Overall organisation of safety monitoring within EDF

The diagram below shows the overall organisation of monitoring within EDF



4.2 Organisation of safety monitoring within the Nuclear Production Division

Monitoring, which is based on the Division's quality control policy, is organised as follows: it is based on the respective responsibilities of the managers of Nuclear plants and the Director of the DPN:

- each nuclear plant has its own system based on indicators and checks,
- the Director of the DPN monitors the level of safety of each nuclear plant, on the basis of a set of additional provisions, which are described below.

The monitoring system set up is used to assess safety performance and the quality of safety management. The assessment of performances alone is not enough to evaluate the durability of results and the dynamics of progress, which are essential for a good level of safety.

Each site is placed in relation to the others, both in terms of performance and safety management.

DPN Management expects to create a progress dynamic out of this comparison of different nuclear plants.

4.2.1 Performance measurement

It is based on a limited number of indicators:

- Automatic Reactor shut downs, with the reactor diverged,
- Non compliance with Technical Specification,
- Lineage errors leading to Significant Safety Events,
- Rate of Set 1 equipment becoming unavailable and the downtime time consumption rate

4.2.2 Assessment of safety management

The assessment of quality is based on:

- assessments carried out by the Nuclear Inspectorate, which reports directly to the Director of the DPN,
- the analysis of safety assessments carried out by sites,
- the result of the annual contractual undertakings of the sites (each site has a Medium Term Plan – MTP – covering a period of three years and which represents a contractual undertaking between the site manager and the Director of the DPN),
- the assessment of the Director of the DPN during management visits to the sites.

The assessment of the proposed level of safety, the quality of the control of safety, the sustained sharing of safety requirements by line management and working teams, in the integration of requirements in working actions and processes, are the criteria given special attention in this assessment of safety management.

4.2.3 Assessment of the Nuclear Inspectorate

The Nuclear Inspectorate makes regular safety assessments on behalf of the DPN: overall safety assessments of each Plant, every three years on average. Targeted assessments of safety, thematic assessments; the assessment programme includes external assessments (OSART, WANO PEER-REVIEW, on one site per year for each of them).

These assessments are based on an assessment reference system which is updated on a regular basis to take changing requirements and feedback into account. Overall safety assessments are used to assess level of performance by theme and are graded from 1 to 7, to place sites in relation to each other in terms of each of these themes and to measure the dynamics and evolutions between two successive assessments.

The technical themes cover operation as a whole. An example of results is given in appendix 1.

4.2.4 Summary of results – Comparison between sites

The results of each site are set out on a diagram which includes the assessment of the quality of management on the x-axis and the level of performance on the y axis. The sites are therefore distributed in quartiles.

The comparison obtained is used to create a dynamic of progress between sites. Support for sites in difficulty and other sites is organised. Overall safety performance is therefore “driven upwards” to avoid a site becoming marginalised by unsatisfactory performances at all costs, which would be a risk for the EDF fleet as a whole.

Appendix 2 shows the results obtained in 2003. If safety performances are analysed and compared with overall performance, it can be seen that the safety results go hand in hand with the good overall performance of nuclear plants.

4.3 Other components of the safety monitoring system

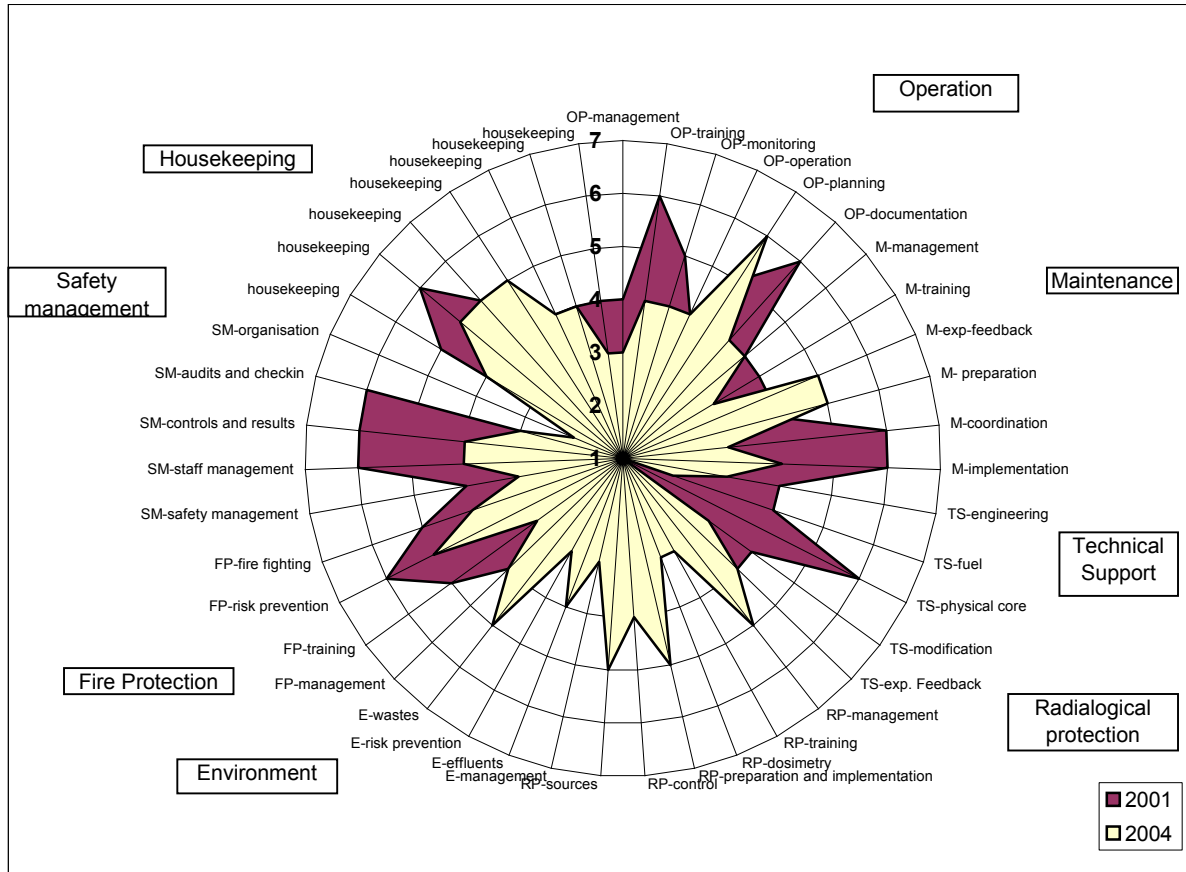
The Nuclear Production Division has a centralised system of internal provisions used to take operating experience feedback into account and to ensure the provisions required on other standard reactor units are incorporated. Implementation is monitored by sampling the assimilation of these internal provisions.

Beyond the comparison of nuclear plants, the Nuclear Production Division uses an external view of operation:

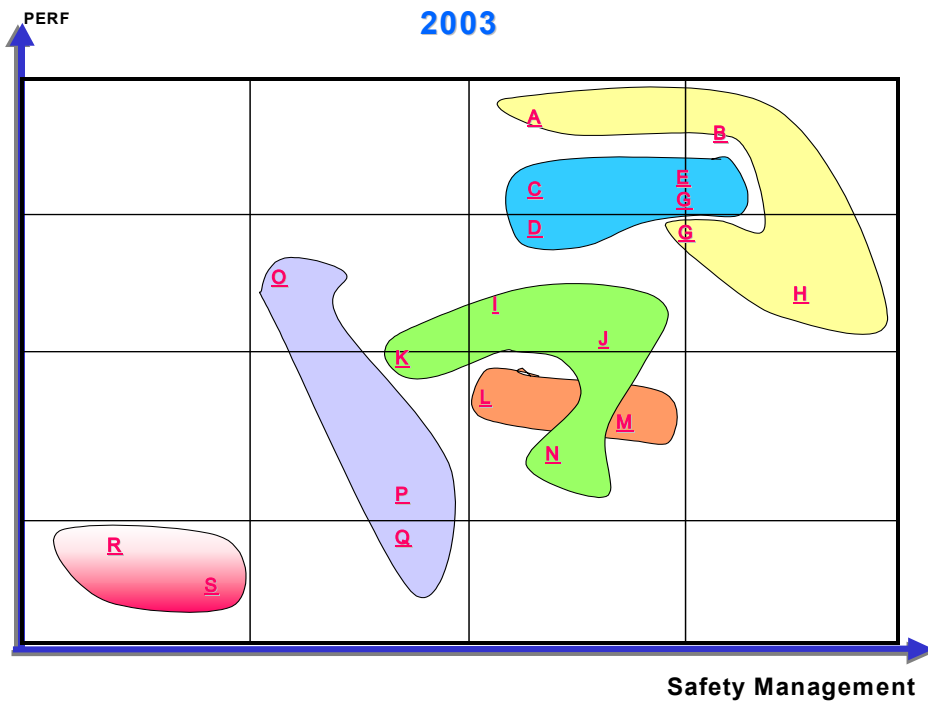
- Through IAEA and WANO Peer-Review assessments,
- Through the use of benchmarking with other operators,
- Through monitoring carried out by EDF with the support of an Inspection Service independent of the DPN,
- Through the control of Nuclear Safety Authority.

APPENDIX 1 – Assessment of EDF sites by the Nuclear Inspectorate

Example of results for one site



Appendix 2 - Results obtained on a safety performance – management diagram



EDF NPP's: Safety management drives global performances

