



TEMELIN NUCLEAR POWER PLANT INFORMATION ON OPERATING EVENTS

**Press conference – the Marriott hotel
Praha, 24th April 2007**

Jiri Bovec, Vice-Chairman of the Board and Chief Generation Officer, CEZ, a. s.
Vladimir Hlavinka, Director of Temelin NPP, Head of Power Plants, CEZ, a. s.
Miroslav Holan, Director of Safety, Division Generation , CEZ, a. s.



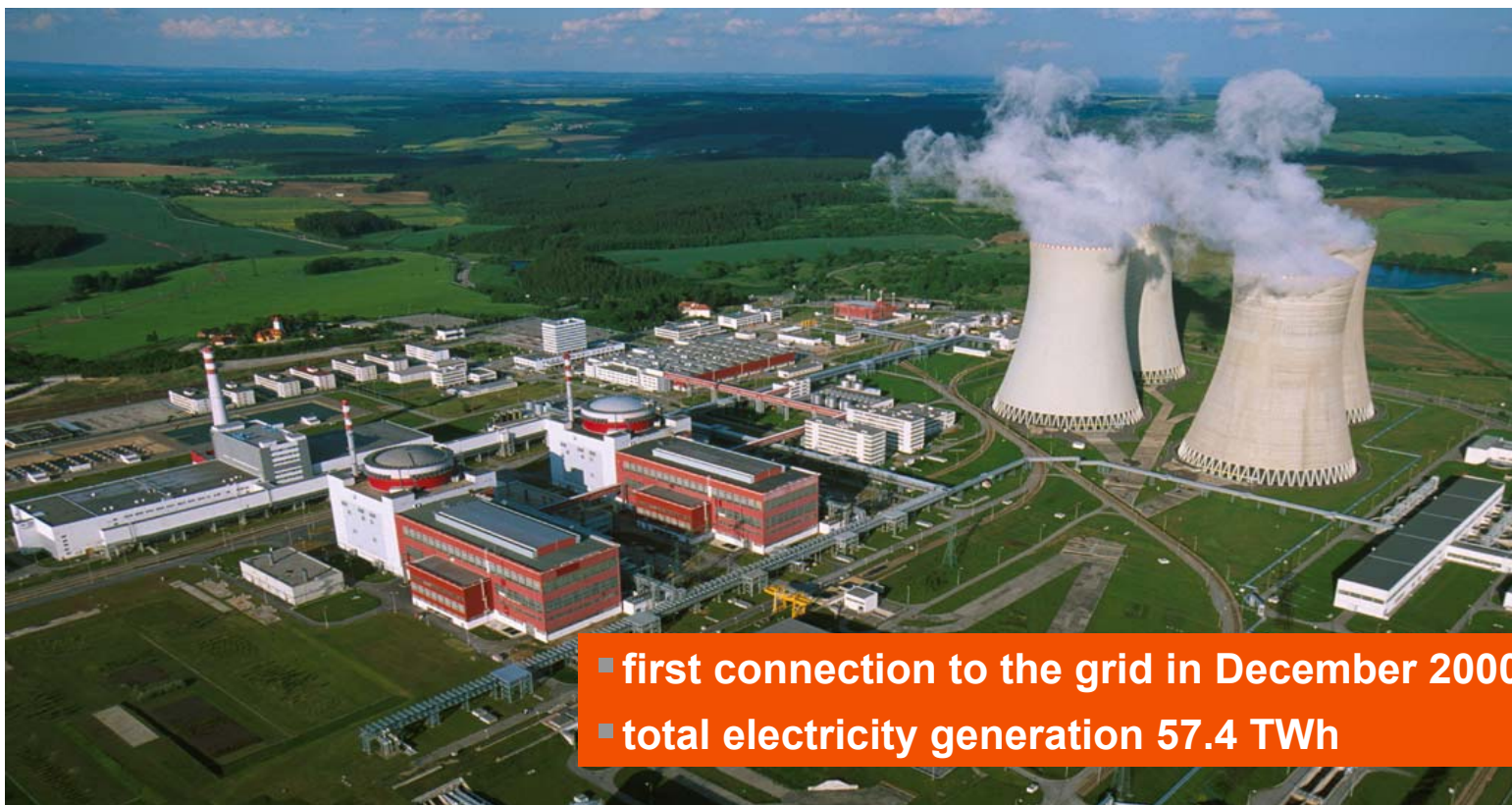
AGENDA

- **Temelin Nuclear Power Plant - facts, present conditions**
- Information on operating events at Temelin Nuclear Power Plant
- Action taken to improve operation



TEMELIN NUCLEAR POWER PLANT

- **Temelin NPP 2x1000 MWe**
- **PWR, VVER 1000, Type V320**
- **2007 is already the 7th year of plant's safe operation**



- **first connection to the grid in December 2000**
- **total electricity generation 57.4 TWh**



TEMELIN NUCLEAR POWER PLANT

- **Strategic investment** of last century's 90's, constructed by majority of Czech suppliers
- **Highest installed capacity** within CEZ Group and in the Czech Republic
- **Safely** operated while implicitly fulfilling all requirements pursuant to the Czech laws and international conventions binding the Czech Republic
- **Emission-free resource, minimal impact on environment**
- **Most frequently internationally inspected** during construction, commissioning and operation
- **No crucial negative findings** by international technical audits
- **Most carefully monitored nuclear power plant in the media**
- **Display of good practice of VVER 1000** reactor improvement

We are not yet fully satisfied with the **reliability** of source and **number of registered events**.



PRESENT SITUATION IN OPERATION

Information on parameters at Unit 1 today April 24, 2007 at 7:00 a.m.

- Unit is in Mode 1 - power operation
- Reactor power - 97 %
- Turbine generator output - 981 MWe
- Electricity generation since the beginning of the year: 638,791 MWh

Information on parameters of Unit 2 today April 24, 2007 at 7:00 a.m.

- Unit is in Mode 1 – power operation
- Reactor power - 100 %
- Turbine generator output – 1,012 MWe
- Electricity generation since the beginning of the year: 2,711,541 MWh





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ORIGIN OF INFORMATION

- Information on events at Temelin NPP – result of discussion of Minister of Industry and Trade Martin Riman, Minister of Environment Martin Bursik, Chairwoman of State Office for Nuclear Safety Dana Drabova and representatives of CEZ company (Martin Roman, Jiri Borovec and Vladimir Hlavinka) on March 17, 2007.
- Purpose of this information is to describe chosen events that have occurred during operation at Temelin Nuclear Power Plant. The key for choosing events for this information is the International Nuclear Event Scale (INES).
- Information covers all events **rated under analyses and evaluation** in the given period in the Temelin nuclear safety section **as INES 0 and above.**



BASIC INFORMATION OUTPUT

- Temelin is a new nuclear power plant in the stage of operation adoption/stabilization
- Records roughly **the same occurrence of events** as Dukovany Nuclear Power Plant in the same period
- Temelin Nuclear Power Plant **has not recorded any operating events endangering its surroundings**
- **No accidents or incidents have occurred at Temelin, no other than deviation or anomaly in accordance with international classification have occurred**
- Compared internationally, Temelin is an average power plant taking into account the number of events
- Power plants with much higher number of registered events, like deviations and anomalies, can be found in Europe as well as in the world



INES INTERNATIONAL SCALE

7 MAJOR ACCIDENT

6 SERIOUS ACCIDENT

5 ACCIDENT WITH OFF-SITE RISK

4 ACCIDENT WITHOUT SIGNIFICANT OFF-SITE RISK

3 SERIOUS INCIDENT

2 INCIDENT

1 ANOMALY

0 DEVIATION

- Scale classifying significance of events reported at nuclear installations
- **Events classified at 7 levels**
 - levels INES 4 to 7 – **accident**
 - levels INES 1 to 3 – **anomalies and incidents**
 - level INES 0 – **deviation**
 - other events – **„no safety significance“**
 - **out of scale**
 - **„no safety relevance“**



EVENTS CLASSIFICATION ACCORDING TO INES

	Nature of event
0 DEVIATION	Deviations where operational limits and conditions are not exceeded (a single random failure discovered during periodic inspections or tests, a fast reactor shut-down proceeding normally, spurious initiation of protection systems, leakages within operational limits, minor spreads of contamination within controlled areas without wider implications for safety culture).
1 ANOMALY	Anomaly with significant defence in depth remaining (equipment failure, human error, procedural inadequacies, breaches of technical specifications, incidents without direct consequences that reveal inadequacies in the organisational system or safety culture, defects in pipework, etc.)
2 INCIDENT	Significant failure in safety provisions, sufficient defence in depth remaining to cope with additional failures (inadequacies in the organisational system or safety culture, a dose exceeding a statutory annual dose and/or a presence of significant quantities of radioactivity in the installations in areas not expected by design and which require corrective action).



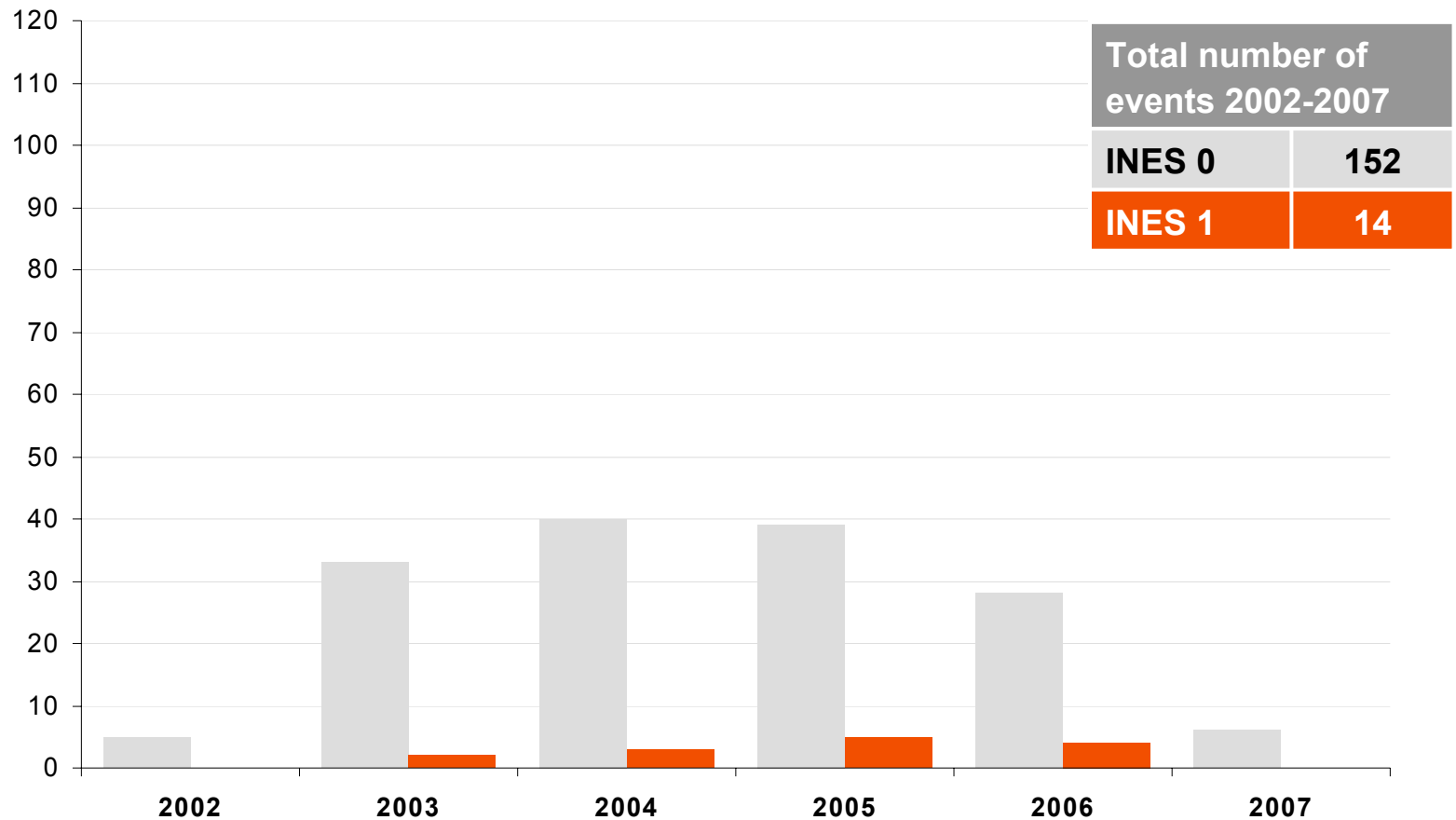
FEEDBACK OF OPERATING EXPERIENCE

- **inspects all events that occur at nuclear power plant, even seemingly unimportant ones as well as so called near miss**
- includes collection of information on events, their registration, investigation, analyses of causes, setting and adoption of corrective action, monitoring and implementation of the action, analyses of their effectivity and trends
- is one of foundation-stones for effecting nuclear safety
- includes support of directness and tendency to thorough investigation of all events and their circumstances, **development of so-called safety culture**
- experience from Temelin NPP operation is shared with foreign countries via intelligence networks IAEA and WANO
- CEZ gains operating experience of foreign nuclear power plants by return



STATISTICS OF INES EVENTS AT TEMELIN NPP

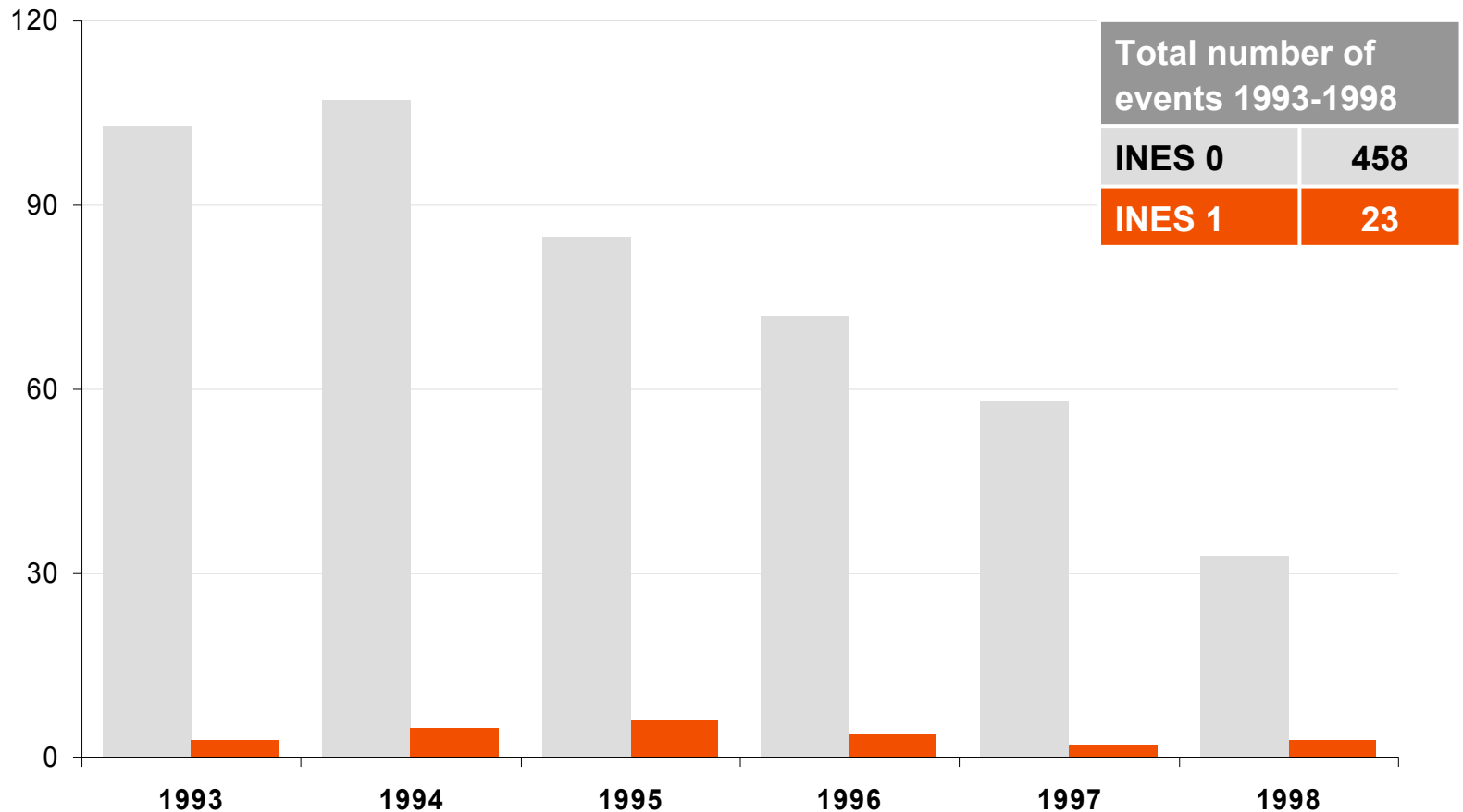
Since 2004, total annual number of events has not increased





STATISTICS OF INES EVENTS AT DUKOVANY NPP

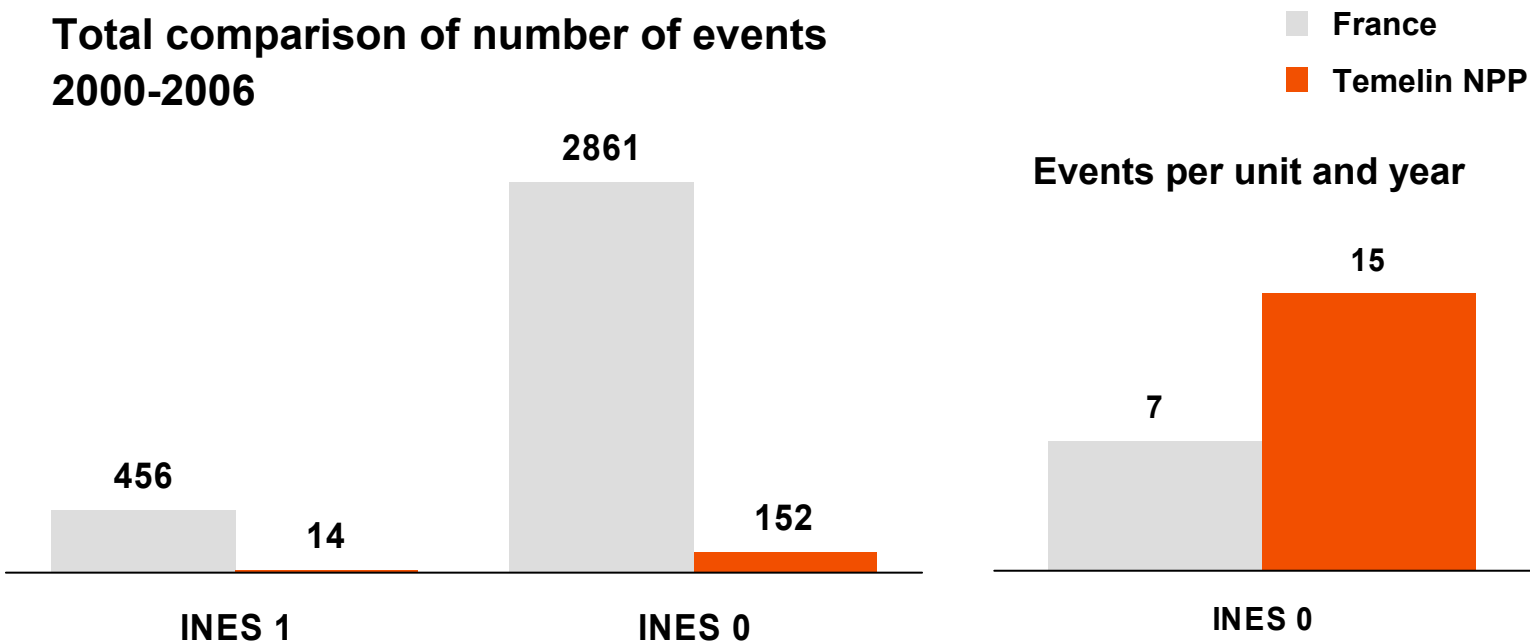
Comparison made with similar stage of plant's life. At that time there were roughly 23 to 28 INES 0 or INES 1 events per each unit in Dukovany.





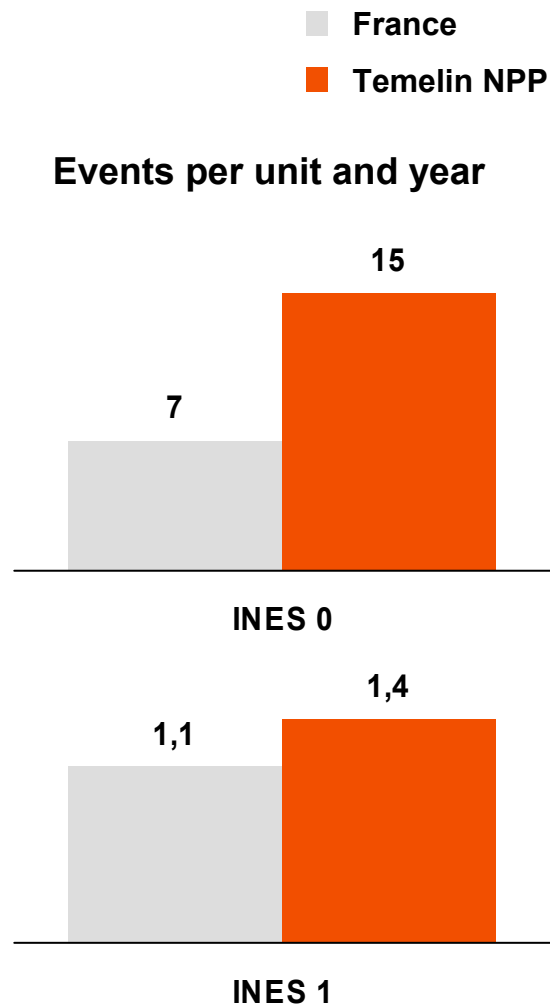
COMPARISON OF NUMBER OF EVENTS WITH FOREIGN COUNTRIES

Total comparison of number of events 2000-2006



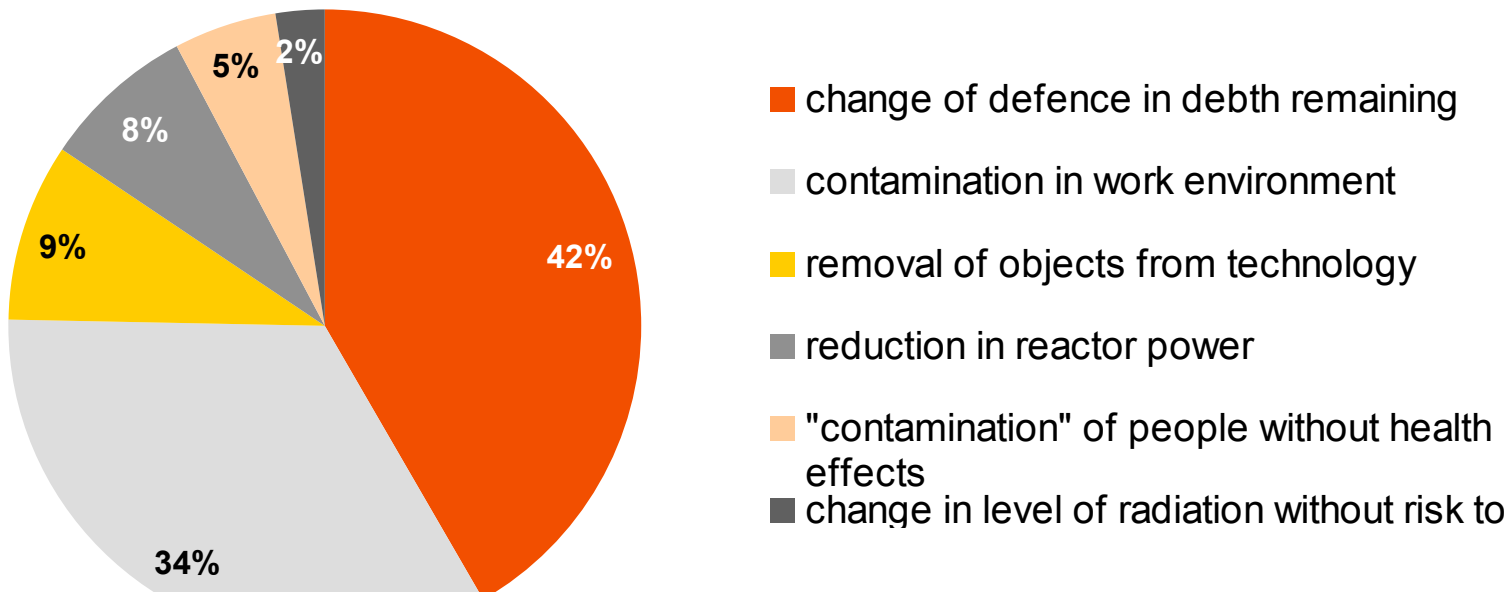
When comparing operation of Temelin with French units, it is necessary to take into account the fact that most French nuclear power plants had already been operating long in 2000-2006 having over two to three decades of operation experience as they had started their operation in the 80's of last century.

Events per unit and year





EVENTS CLASSIFICATION FOR PURPOSES OF INFORMATION BY EFFECTS



	Number of events
change of defence in depth remaining	69
contamination in work environment (controlled area)	56
removal of objects from technology	15
Incidental reduction in output	13
„contamination“ of people in controlled area	9
change in level of radiation without risk to environment	4
total	166



INFORMATION HANDLING

- Information has been **given officially to Prime Minister** today
- Information will be available to the public on www.cez.cz
- Information is technically-oriented and its attachment contains description of all classified events
- Similar problems (events INES 0, 1 and above) occur **at** other world nuclear power plants, although they **may not be reported**
- CEZ Group's directness regarding questions about Temelin plant is highly **above standards and unusual in the world**
- Informatory duty imposed on Temelin plant by the Melk Protocol is so above standard that the plant **informs about many usual operating events, which are sometimes, unfortunately biased and misused**

No event described in the Information had negative impacts either on safety of plant's staff, citizens in near or far surrounding of the plant, nor on environment.



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PROGRAMME „SAFELY 15 TERA“

- **What we are still not satisfied with**
 - shut-downs extension (fuel and repeated repairs)
 - Needed rod drop tests
 - Number of operating events

- **Negatives it brings**
 - impact on production and economy of CEZ Group
 - large media attention and media pressure
 - political impact, international aspects
 - virtual Temelin – media picture does not correspond with the real conditions of the plant



PROGRAMME „SAFELY 15 TERA“

■ Goal

- Safely reach expected electricity production at 15 TWh in medium term

■ Tool

- Programme „Safely 15 TERA“

■ Principles

- safely
- in a controlled way
- economically
- in a transparent manner





CONTENTS OF SAFELY 15 TERA PROGRAMME

- **Technical adjustments**
- **Organizational adjustments**
- **Development of safety culture**



TECHNICAL ADJUSTMENTS TO „SAFELY 15 TERA“ PROGRAMME

- New strategy of fuel cycle (spent fuel storage, development project, licensing programme.....)
- Technical innovations programme (HP rotor, dieselgenerator, room 820.....)
- Effective coordination and shutdown optimization





ORGANIZATIONAL ADJUSTMENTS TO „SAFELY 15 TERA“ PROGRAMME

- Personnel changes at plant's management
- Transfer of some sections to direct subordination of the NPP director
- Organizational changes in Production section, creation of Asset Management and Central Engineering



DEVELOPMENT OF SAFETY CULTURE OF „SAFELY 15 TERA“ PROGRAMME

- Long-term programme based on similar experience of Dukovany
- Consistent enforcement of proven principles of nuclear community
 - everybody is personally responsible for nuclear safety
 - managers are leaders who demonstrate their attitude to safety as commitment
 - mutual trust permeates organization
 - decision-making process follows „safety first“ rule
 - nuclear technology is respected as extraordinary and unique
 - questioning attitude is cultivated
 - continuous learning of organization is adopted
 - nuclear safety is subject to constant checking



THANK YOU FOR YOUR ATTENTION