



vuje

Nuclear Safety Division

Department of Safety Analyses

www.vuje.sk

2014



vüje

The major Slovak TSO, established in 1977

Private, share holding company

Providing full scope services for nucl. industry

Design, supply, implementation, research and training activities, mostly focused to nuclear but also to conventional power generation and transmission lines

NUCLEAR POWER INDUSTRY

Studies

Pre-project analyses, feasibility studies



Design

Basic and final design, safety documentation and regulations, project management



Construction

Physical and energetic start up, assessment of the equipment



Operation

Safety and reliability of operation, personnel preparation, diagnostics

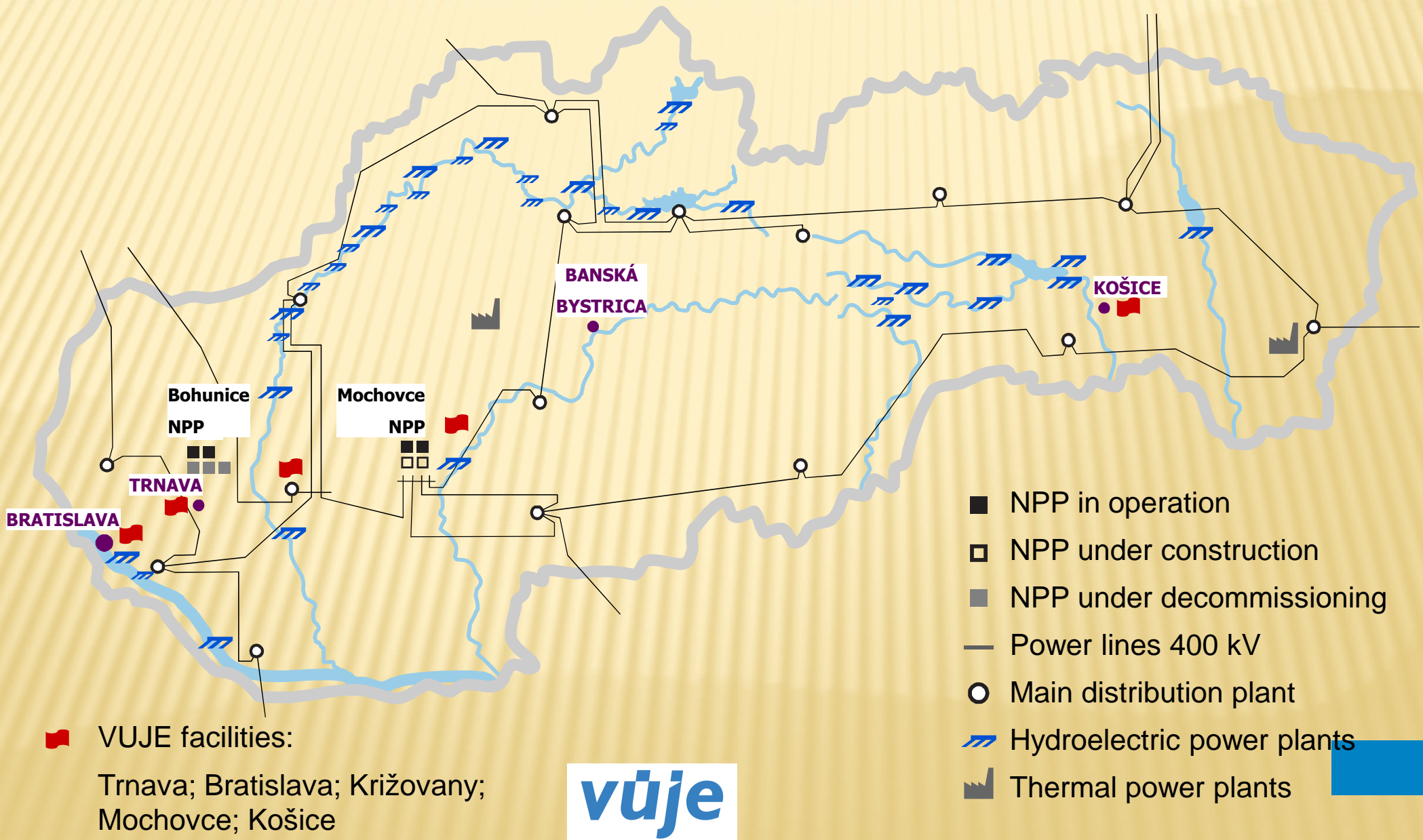


Decommissioning

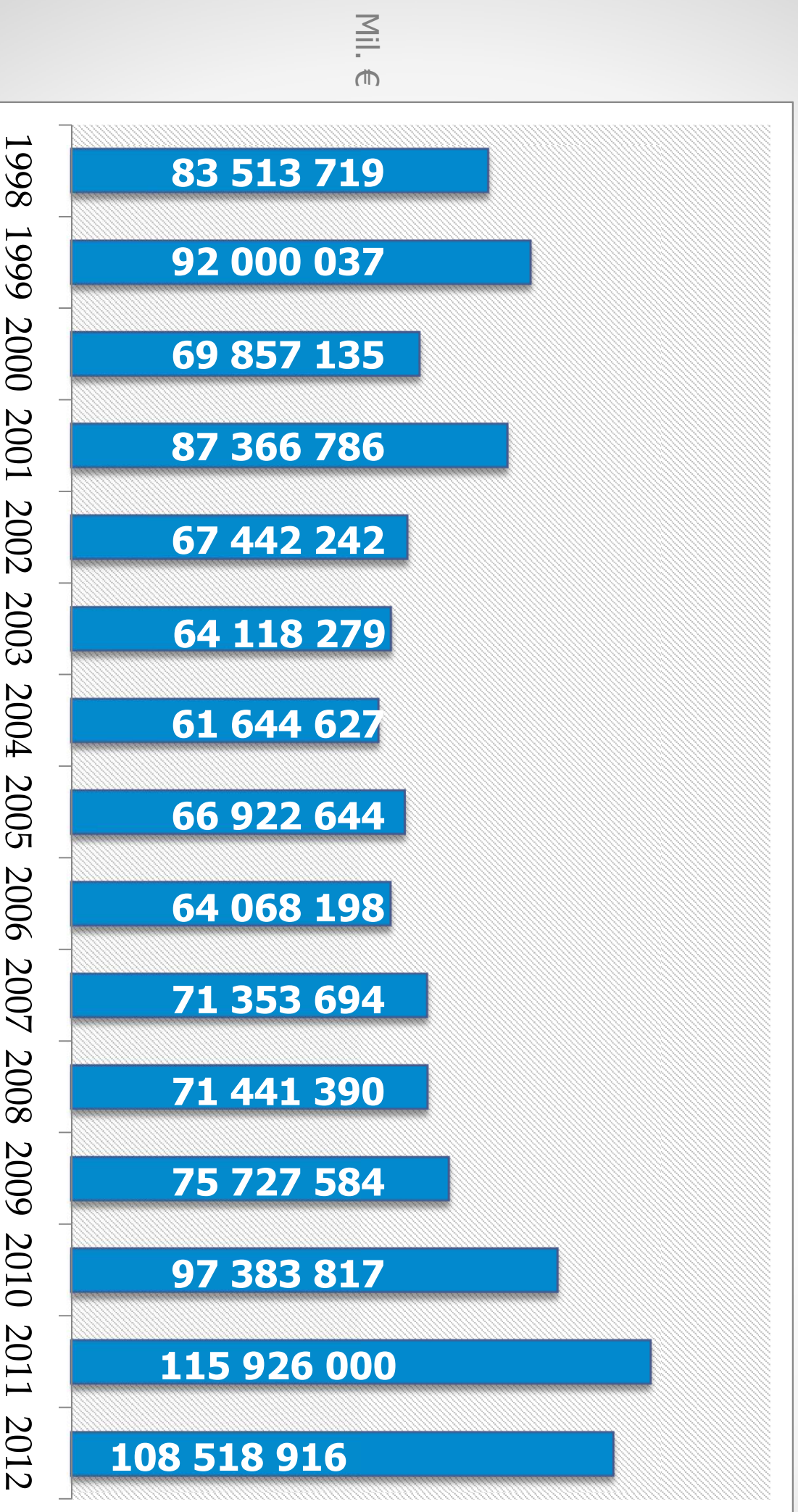
Project of decommissioning nuclear facilities, realization of decommissioning, development methods, RAW processing



SLOVAK POWER SOURCES AND VUJE FACILITIES IN SLOVAKIA



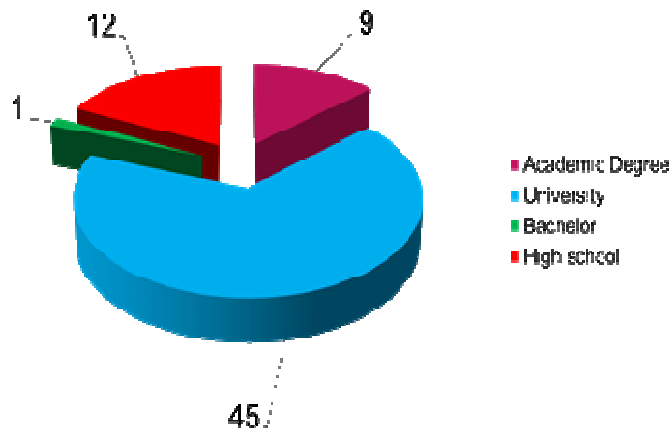
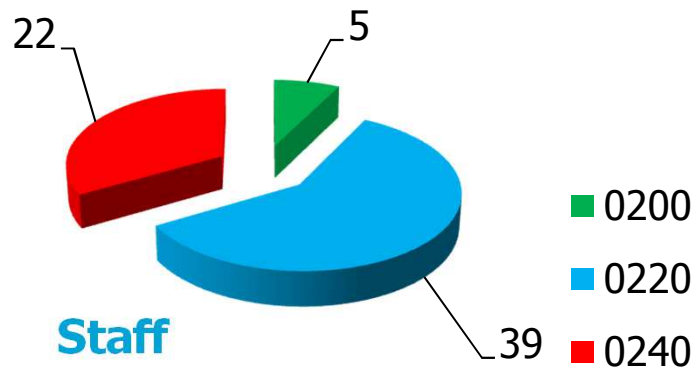
Annual turnover



Organization structure of the VUJE

- 0100 Department of General Director**
- 0200 Division for Nuclear Safety**
- 0300 Division for Diagnostic of Nuclear Power Components**
- 0400 Division for Preparation of NPP Operation**
- 0500 Division for Support of NPP Operation**
- 0600 Division for NNP Personnel Training Centre**
- 0700 Division for Radiation Safety, NPP Decommissioning and Radwaste Management**
- 0800 Division for Information Technologies**
- 0900 Division for Commerce, Engineering Activities and Services**
- 1000 Division for Economy**
- 1200 Division for Support of Electric Grid Control and Operation**
- 1700 Division for Preparation and Construction of New NPP**

Structure of the Nuclear Safety Division (NSD)



PROFFESIONAL GROUPS

- Neutronics and fuel
- Design basis analyses
- Severe accidents
- Probabilistic analyses
- Emergency planning and Radiation Impacts
- Shielding and fluency
- Monitoring systems design
- Specific measurements at NPPs

Qualification structure

Mission and strategy of the NSD

VUJE as the major Slovak provider of nuclear services

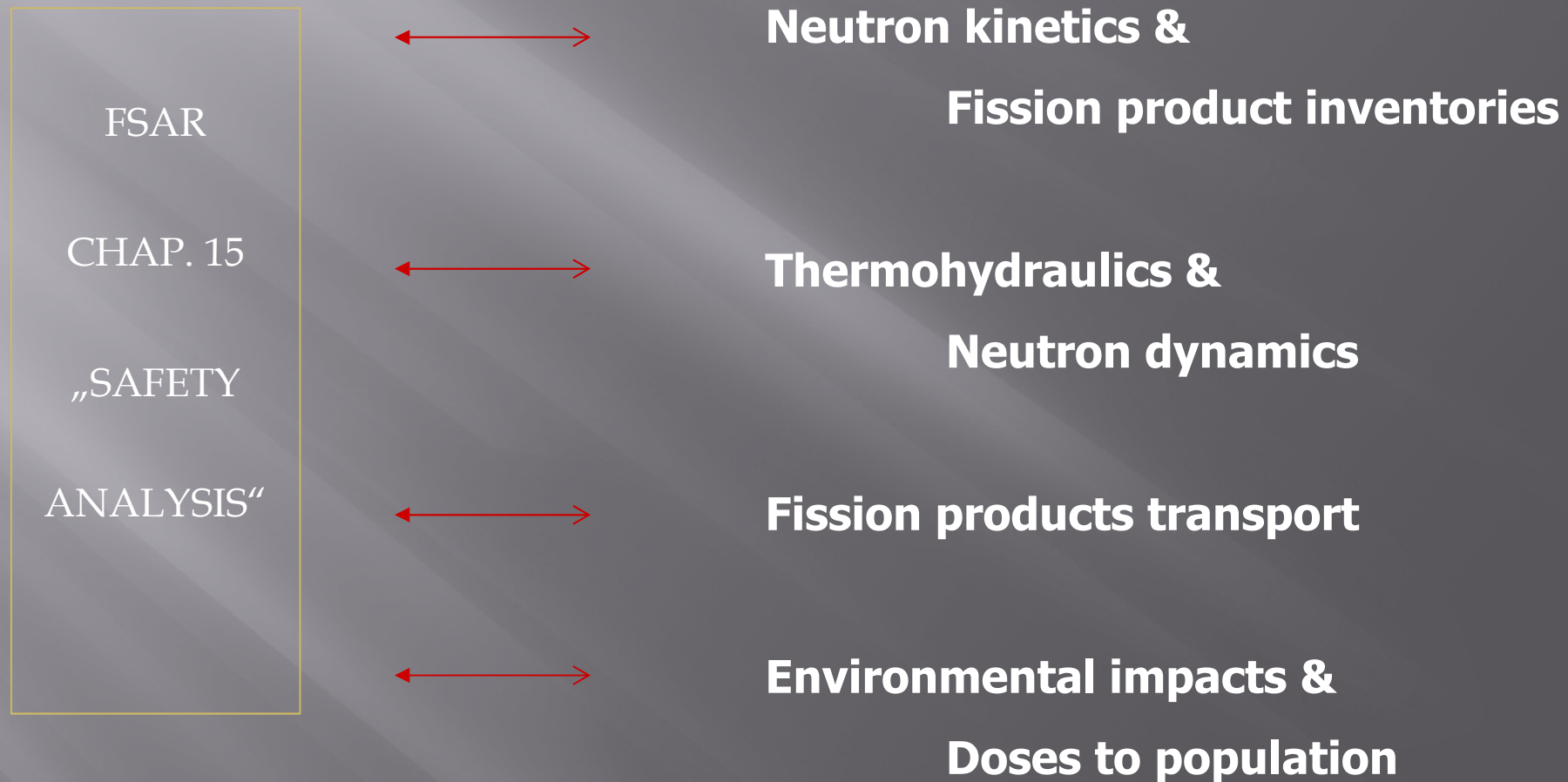
found its top mission in **qualified evaluation of safety of nuclear installations**

Structure, capabilities and skills of the NSD are set for qualified elaboration of

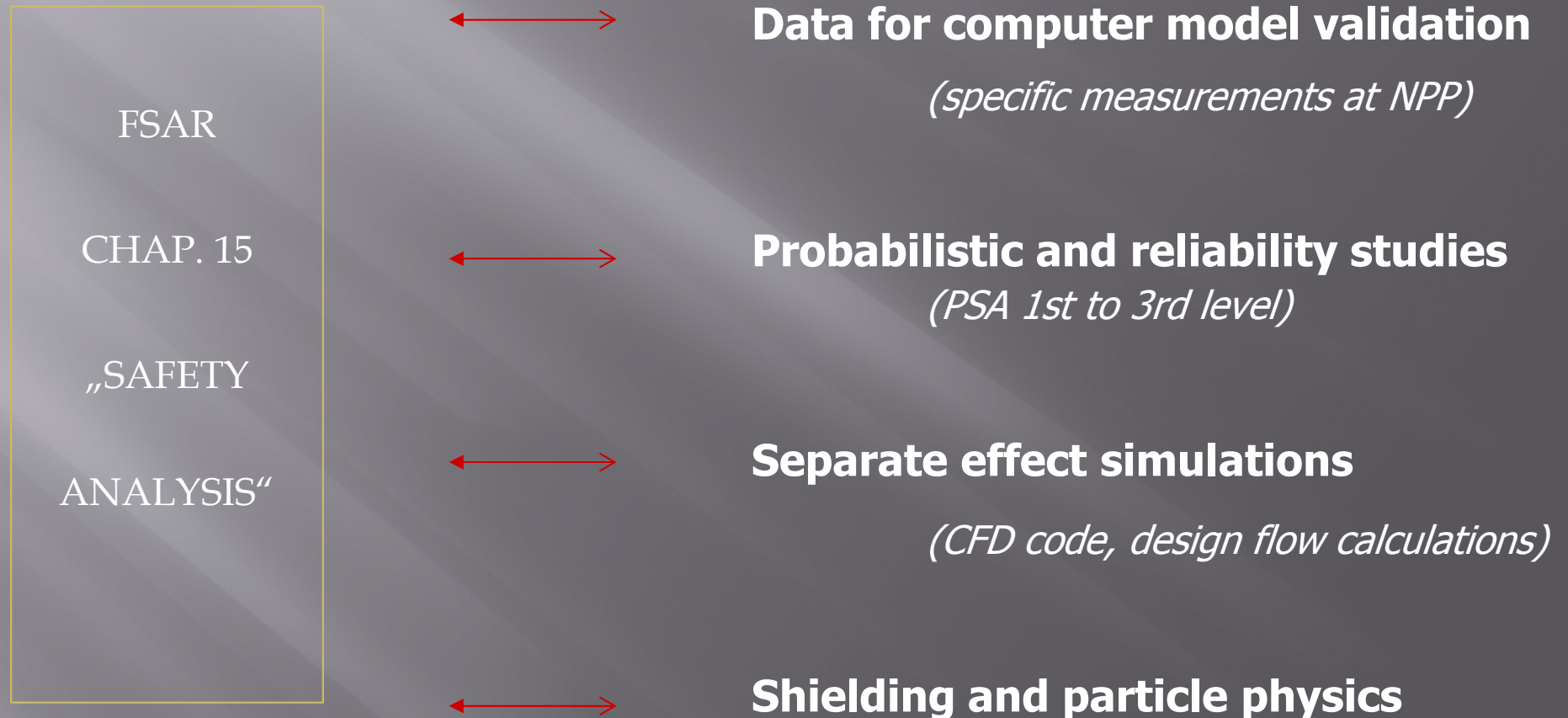
FSAR Chapter 15 (RG1.70) - Safety Analysis

and related applications

Main analytical areas covered directly by the NSD staff



Supporting activities covered **directly by NSD staff**



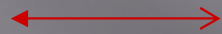
Supporting activities covered by other VUJE sections

FSAR
CHAP. 15
„SAFETY
ANALYSIS„



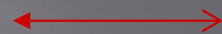
Structural analysis of steel components

(response of RPV or pipelines, aging)



Detail analysis of design and control

(supporting data for model development)



Specific applications

(e.g. FSAR of spent fuel depositories)

Areas of induced typical services provided by NSD

Probabilistic studies – PSA 1st to 3rd level covered integrally by NSD

utilizing capabilities of deterministic simulations from operation to severe accidents

Development of operation procedures for 3rd to 5th level of Defence in depth

Emergency Operation Procedures,

Severe Accident Management Guidelines,

Emergency Preparedness and Emergency Planning

Safety concepts and design modifications for severe accidents control

(e.g. FSAR of spent fuel depositories)

Periodic safety reviews, Feasibility studies, Environmental Impact Analyses

(either coordination or participation within expertise of NDS)

Specific, precise measurements at nuclear units

(heat and mass flows, balances, pressure, flow and containment leakages)

Design and delivery of selected monitoring and control systems

(PAMS, SAMS, coolant level monitoring, reloading machine control system)

6th EMUG Meeting v.s. MELCOR application by NSD

NSD SA group is responsible for Severe Accident Management Guidelines for MO34 units

(developed by WEB/VUJE)

For the next week the MO34 SAMGs validation is planned

The SAMGs development puts together all experience and achievements

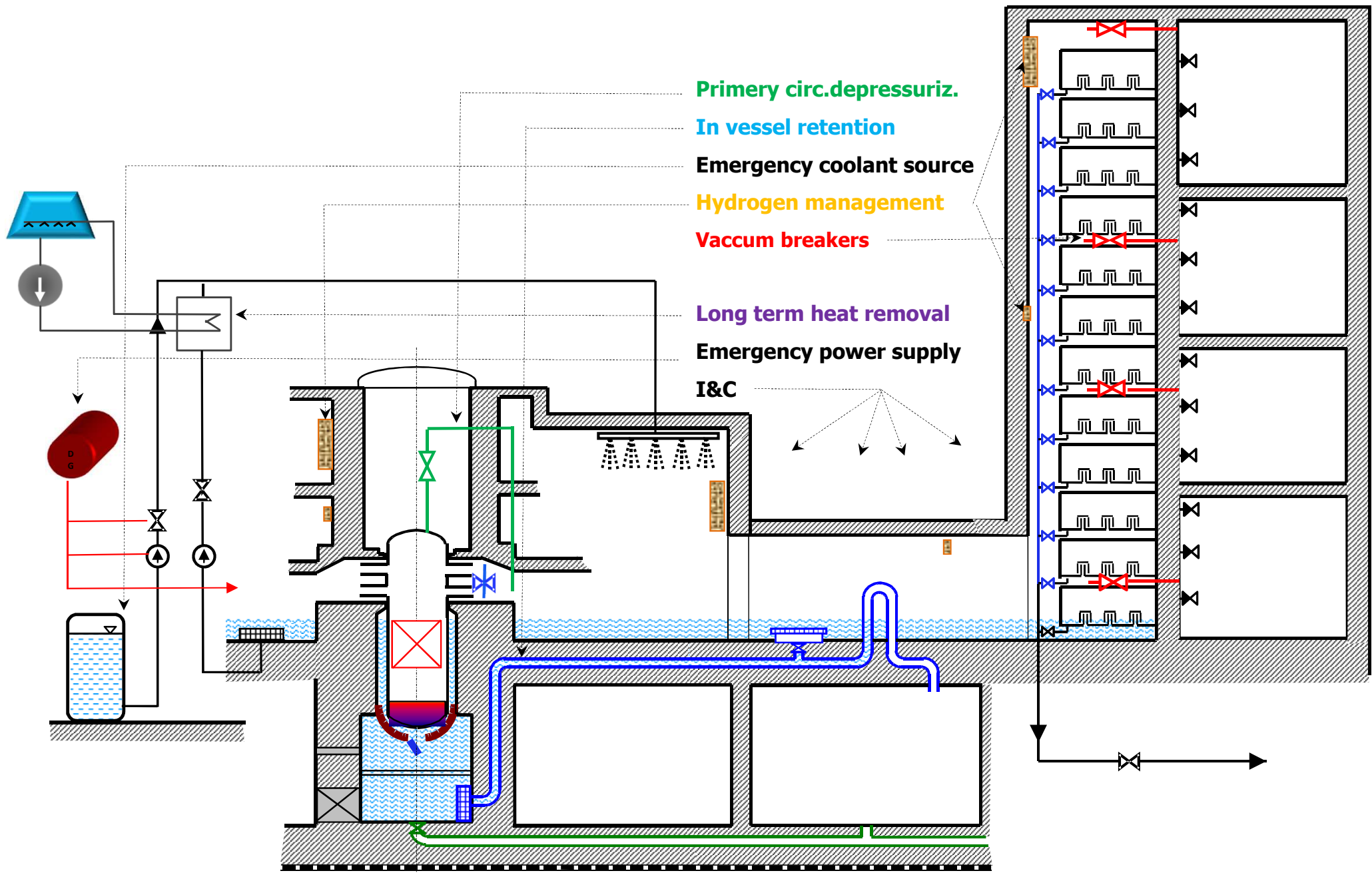
gained in the last almost 20 years

mostly coming from MELCOR code simulations

6th EMUG Meeting v.s. MELCOR application by NSD

SAMGs are the final step of long term effort of both VUJE and SE, a.s. (NPP), based on:

- **understanding of severe accident phenomena applied to the VVER design**
- **identification of weak features of the units**
- **setting the optimum severe accident management strategy**
- **proposal and justification of design modifications in iterative mode**
- **analyses for qualification purposes and for design finalization**
- **integral and full scope final evaluation of new design of the units**



6th EMUG Meeting v.s. MELCOR application by NSD

**Although the SAMGs and MO34 design is finalized,
with similar status at all units in Slovakia,
the never ending effort to enhance safety shall continue.**

The EMUG meeting surely will contribute to it.



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