



## QUICK BACKGROUND ON EU NUCLEAR POWER PLANT STRESS TESTS

September 2014, Joint Project

### Key Stress Test results for the four units of the Dukovany nuclear power plant in the Czech Republic:

- ✓ ..... Dukovany NPP would not withstand a natural hazard like an **earthquake**. A thick layer of snow on the turbine hall roof can lead to a loss of the safety systems. In worst case cooling will fail, heat accumulate and move the plant slowly towards an accident.<sup>1</sup>
- ✓ ..... In one decisive aspect Dukovany belongs to the worst plants in the EU: Lack of an alternative Ultimate Heat Sink. This simply means that Dukovany has only one way to cool the reactors: Its 8 cooling towers. Once they have stopped working properly, the plant is on the way to a major accident.
- ✓ ..... However, those cooling towers at Dukovany are so weak, that strong wind could make them crumble and fall apart. New ones are now being planned and built – but the old weak ones will remain the back-up heat sink despite their weakness. Thus, the lack of an alternate Ultimate Heat sink persists. Units 3&4 will be operated without new towers at least until 2016.
- ✓ ..... Fukushima lessons are not taken seriously: The station black-out, when the plants are suddenly cut off from all electric power supply accompanied by a chaos after earthquake and tsunami, was identified as one of the main reasons for the melt-downs at Fukushima, the Czech side refuses to incorporate this threat in their analyses. Their scenario for station black-out as set up in the Czech analysis: Everything outside the plant is working just fine, no earthquake and no infrastructure break-down, also inside the plant everything is fine – a complete deliberate misunderstanding of the exercise.

### Stress Tests - what is happening now?

After the results were published, the Czech nuclear authority and the operator set up their own plan to improve safety. The result is a mix of already planned measures, some new ones and some delayed into the future without an exact date – the Czech National Action Plan.<sup>2</sup>

This means that measures will be implemented – but only until end of 2016. Or later! Because in some cases, until end of 2016 only analyses will have been completed to find out what is necessary and only then there will be plans to be realized even later. The **earthquake** measures can serve as a good example: Necessary analysis will not be completed before 2015, conclusions drawn and implemented later. But the ongoing and the planned modernization of earthquake protection will not be sufficient.

The Stress Test Peer Review Team who looked at the Czech self-assessment of Dukovany safety recommended investigating the potential re-criticality of the molten core, to see whether during or after an accident the already molten core could re-start chain reaction and turn into a major accident one more time. The Czech work plan for Dukovany (National Action Plan) simply ignored this recommendation.

Cooling towers: SUJB nor ČEZ are in no hurry. While the plant is still in operation, the only heat sink being the cooling towers, the new ventilator towers will not work before 2016, and their efficiency is not confirmed anyway. **After cooling failure, only a few hours would be available to keep the fuel in the reactor and the spent fuel in the pools from melting.**

<sup>1</sup> Nejzávažnějším dopadem extrémní sněhové zátěže může být pád střechy strojovny, což může vést ke ztrátě bezpečnostních systémů umístěných na strojovně. Nejzávažnější dopad může mít vyřazení systému TVD, což může vést k ohrožení funkce dlouhodobého odvodu zbytkového tepla. Source: Národní Akční Plán, October 2013. SUJB.

<sup>2</sup> [www.ensreg.eu/sites/default/files/National\\_%20Action\\_%20Plan\\_CZ\\_Final%20doc.pdf](http://www.ensreg.eu/sites/default/files/National_%20Action_%20Plan_CZ_Final%20doc.pdf)



At the same time the Stress Test revealed, that the measures to deal with a possible **severe accident** from developing into a nuclear disaster are not **sufficient**; a deadline when those measures would be in place is not even mentioned in the Czech National Action Plan. In general, the Czech operator is reluctant and has been for years to invest in safety on the level currently applied: so again during the Stress Test the recommendation to equip the reactor with additional filtered venting system which would help to contain severe radioactive releases during accidents is met with reluctance also by the regulator; no decision has been made so far. To install the technical means to prevent hydrogen from exploding during accidents as happened at the Fukushima reactors is not scheduled before 2015. Also only until 2015 but with unproven effect another serious measures will be installed: External cooling of the reactor pressure vessel. Until then: Overpressure in the so-called containment is solved by releasing unfiltered radioactive substances into the environment. It is highly probable that this irresponsible measure will remain the last possibility to prevent long-term failure of the containment.

### **Which measures will fight a nuclear accident?**

Fire trucks! **Simple fire trucks** are the Czech answer to this. In practice this should work the following way: As alternative heat sink it is proposed to pump water from fire trucks into the steam generator. This water will evaporate and the steam will be released into the atmosphere. In case of an accident, instead of relying on some at least partly passive cooling systems, the prevention of a major radioactive release depends on the quick response of the fire brigade.

### **Warning!**

The Czech side is not acting on behalf of people and environment, but is neglecting safety as this short paper shows. At the same time, the Dukovany reactors increased their electric output because of economic reasons thereby increasing pressure on safety, using up safety margins. Currently those plants are reaching the end of the 30 year life time in 2015– prolongation is a serious hazard and need to be prevented. Dukovany reactors need to be shut-down immediately, to permit 10 or even 20 more years is utterly irresponsible.

### **Dangerously one-sided information for the Czech public**

While the Stress Tests could not reveal all problems, cannot confirm the design of the plants and the dangerous ageing phenomena of the components, a careful look reveals the propaganda applied in the closed system between nuclear regulator (SUJB in CR) and the operator (ČEZ). The public however receives the following information by the operator: „*The stress test results<sup>3</sup> for NPP Dukovany (...) confirmed the decisions taken to improve the original project as effective and correct. No situation was found, which requires immediate solutions. The NPP can cope with highly unlikely severe accidents (...).*“

Another ČEZ press release of May 2013 simply states: „*(...) top-notch performance and maximum safety of the power plants (...)*“<sup>4</sup>

And still, only those two – SUJB and CEZ – negotiate in a closed procedure which safety measures to realize or postpone – which is a dangerous game.

**Conclusions & Demands:** This situation needs much more attention by the politicians and the public; regular, transparent and understandable reporting as promised on European level has to be introduced. The four Dukovany reactors need to be shut-down; operating them without the upgrades recommended by the Stress Tests should be stopped by the regulator SUJB.

<sup>3</sup> [www.cez.cz/cs/vyroba-elektriny/jaderna-energetika/zatezove-testy-eu/provedeni-a-vysledky-zatezovych-testu-je-dukovany.html](http://www.cez.cz/cs/vyroba-elektriny/jaderna-energetika/zatezove-testy-eu/provedeni-a-vysledky-zatezovych-testu-je-dukovany.html)

<sup>4</sup> [www.cez.cz/en/cez-group/media/press-releases/4380.html](http://www.cez.cz/en/cez-group/media/press-releases/4380.html)