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COMMENTS

On the “stress tests” specifications – Proposal by the WENRA Task Force, 21 April 2011

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GREENPEACE

International

My name is Jan Haverkamp. I am 52 years old and have an academic engineering degree (Ir. - equivalent with a Masters degree) in Environmental Hygiene from the Agricultural University in Wageningen as well as a candidate (equivalent with Bachelors) degree in Biochemistry from the State University in Leiden, both in the Netherlands. I have studied also nuclear physics and energy policy at the State University in Leiden.

I work as an independent expert in energy issues with specialisation in nuclear energy for the global environmental organisation Greenpeace.

I have been asked by Greenpeace to write comments on the "Stress Tests" Specifications – Proposal by the WENRA Task Force, 21 April 2011. I wrote these comments on personal title and my opinion – though based on my experience within Greenpeace and benefiting from input from other Greenpeace colleagues and experts – does not necessarily coincide with the opinion of Greenpeace as organisation.

Brussels, 05 May 2011
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1. This WENRA paper is not fulfilling the demand from the March 2011 Summit of the European Council for the highest standards in nuclear safety[1], nor the promises of the European Commission for an in-depth analysis of nuclear power stations in Europe after the Fukushima catastrophe.

2. Several countries have already come forward with ideas for stress tests that go beyond what is on the table from WENRA. Germany's GRS, as example, has worked out good proposals that could function as a lead. Any pan-European proposal should be guided by the highest level proposals on individual issues from the Member States. With the now presented proposal, WENRA creates the suggestion that it submits to the nuclear lobby by coming with a minimalistic set of measures instead of an appropriate assessment on the basis of the lessons from Fukushima.

3. The time made available for the public to give input on this paper (less than 2 weeks including several public holidays) was inadequate and the way the possibility to give feedback was communicated was insufficient.
   Having said this, Greenpeace would like to give the following input on the basis of the presented paper.

4. Page 1: **Definition of the "stress tests" –** The stress tests definition is limited to a targeted reassessment of safety margins of nuclear power plants in the light of extreme natural events challenging the plant safety functions and leading to a severe accident. **The definition wrongly excludes man-made events like severe human error, sabotage, malevolent attack, acts of war, as well as combinations of these in challenging natural circumstances.** There is no reason given for this omission, nor is there any valid reason why these aspects should be excluded, given the role human error played and plays also in the Fukushima disaster, and the relative lack of attention the human factor receives in standing assessments.

5. Page 2: **"Adequate performance of those systems has been assessed in connection with plant licensing and is not re-assessed in the stress tests."** – If one lesson is to be learned from the Fukushima catastrophe, it is that previously done tests and assumptions need to be regularly re-assessed – especially when previous assessments may have been influenced by other than safety interests (closeness between operator and regulator – a regularly recurring allegation in the Japanese case, mirroring the situation in the EU – , political or economic interference with safety related decisions). Full and effective regulatory independence is in many countries of the European Union a relatively new phenomenon since it was legally prescribed in Directive 71/2009/Euratom art. 5 (2). This regulatory independence can therefore not be taken for granted on beforehand. This is especially true for issues and events that have been flagged during the history of a nuclear power station, have not received a proper follow-up for several reasons, and that could have an impact on the events during an emergency situation. One example is the issue of faulty welding in unit 1 of the nuclear power station in Temelín in the Czech Republic – an issue according to our estimation dismissed under political pressure by the regulator at the time of discussion in the early 2000s, even though inspection report 15/2001/SUJB allegedly pointed out to problems. The weakness in the welding seam caused by the whistleblower reported faulty repair in 1993 could become in a multi-causual emergency situation a vital issue. **Stress tests** therefore **should re-visit issues that have been dismissed in the past**.

6. The WENRA task force writes: "It is recognised that **all measures** taken to protect reactor core or spent fuel integrity or **to protect the reactor containment integrity constitute an essential part of the defence-in-depth.**" If this is acknowledged, it is not understandable why protection measures against sabotage, malevolent attack or acts of war have not been included in this proposal for stress tests.

7. WENRA proposes that **the licensees perform the reassessments**, because they have prime responsibility for safety. This is a wrong assumption. Because the licensees have prime responsibility for safety, they have to **finance** the reassessments. Letting them perform the reassessment gives them

1 European Council, *EUCO 10/11, European Council - 24/25 March 2011 – Conclusions*; http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/120296.pdf: *"the highest standards for nuclear safety should be implemented and continuously improved in the EU and promoted internationally"*

possibilities to influence the outcome on the basis of their primary responsibility towards their shareholders, which is making profit. **The reassessment should be carried out by an independent body or consultant with full and unrestricted access to all documentation and the right to demand physical tests in case data are not available or unsatisfying.** A reassessment carried out by the licensee is simply not credible.

8. **Review by the regulatory bodies is not sufficient.** Even though regulatory bodies are now legally obliged to be independent (71/2009/Euratom art. 5(2)), many are still in the process of gaining fully effective independence – indeed in some countries the links between regulator and operators have been traditionally so close that there is a lack of credibility within the population. **The regulatory body** should indeed review the reassessment critically, but also **should be peer-reviewed by other regulators** (including regulators from Member States that have not chosen for nuclear power – i.e. under coordination of ENSREG rather than WENRA) **and independent assessors** (from academia, independent institutes and NGOs). A mere public seminar on national and/or European level is not sufficient.

9. **Initiating events conceivable at the plant site** – These should also include malevolent attack, acts of war and large scale grid instabilities (for instance by the scramming of other centralised power stations as a result of a natural event, grid event, human error or malevolent attack).

10. Page 3: **The severe accident management issues should** not only address technical issues on the power station, but most certainly **also must include emergency management towards the population and the surrounding and wider environment.** Fukushima has shown very clearly that neither TEPCO as licensee, nor the local, regional and national authorities were properly prepared to deal with the exposure of the population to radiation (e.g. the late response to evacuate vulnerable parts of the population outside the 10 and later 20 km zone, the heavily criticised information policies, the late start and too limited extent of radiation measurements outside the 20 km zone and at sea), and to prevent leakage of huge amounts of radioactive substances into the environment (e.g. the air and sea). Severe accident management assessment should also include the way communication with the public is planned to take place.

11. The topic of **emergency preparedness measures managed by the relevant off-site services for public protection** should **not** be out of the scope of the stress tests. A nuclear power station in an environment that cannot handle potential catastrophes should be closed down immediately until such infrastructure is available.

12. Page 4: Format of the report. The introductory part of the report should also include an **overview of the safety history of the plant** including an analysis of all incidents and assessment of relevance of incidents for the further stress test.

13. Page 5: **Dependence of one reactor on reactor functions of other reactors** or on support functions for other reactors should be assessed.

14. **Transparency** – All documentation should be open to review if so required by the peer reviewers. It should not be possible that reference documentation is kept away from peer-review on the basis of confidentiality. Towards the public a maximum transparency should be implemented during the whole process of the stress tests, with the public interest as leading criterion.

15. Page 6: **Earthquakes**. Earthquake data should be based on a very long term assessment of the earthquake situation in the region. Earthquake analyses should be assessed by independent geological and geophysical experts. This to prevent under-estimation of potential earthquake risks as happened in Fukushima, but also for instance in the Environmental Impact Assessments for the Belene (Bulgaria) and the Cernavoda (Romania).

16. **Provisions to protect the plant against the DBE**: this should also include potential damage to cooling water intake structures as well as cooling water exit structures, including trenches, ditches and other structures that might lead out contaminated water from the power station.

17. Page 8: **Flooding** – Independent assessment of flooding by independent meteorologists and hydrologists is needed.

18. The **flooding assessment** should also include bank-flooding of rivers and instabilities in the underground caused by flooding. It should furthermore include potential flooding of cable trenches and underground cellar structures and tunnels as well as flow-off through the underground.

19. Provisions to protect the plant **and the population** against **the effects** of DBF: assessment of ways to control streams of contaminated water and means to store contaminated water. Assessment of pumping and storage capacity for contaminated stream-off water.

20. In general, **the proposal lacks sufficient analysis of necessary post-accident activities** both within the plant and outside, as well as on a technical, organisational (logistical) and health impact prevention level.

21. Page 9: **Very bad weather conditions** – should also include issues like prolonged drought, prolonged rainfall, prolonged extreme cold or heat – including effects on the availability of cooling water and availability of off-site electricity (e.g. because of damage to grids because of long periods of extreme cold) during those periods as part of multi-causual incidents and accidents.

22. Page 10: **Loss of power** – assessment not only of fuel degradation, but also of transport degradation of fuel – damage to fuel pipes, mobile fuel transports, lack of availability of transport capacity due to infrastructure damage, etc.

23. Page 12: **Severe accident management.** This proposal focusses only on the on-site management, but leaves out the off-site management. This needs to be included as well.

24. Concerning **on-site management:** a lot of problems in Fukushima were caused by damage to roads and debris laying around. There was a complete lack of robotic equipment to remove debris in order to create access for, for instance, the high-powered fire trucks. Assessment of accessibility should be included in the stress test, including accessibility for emergency cooling equipment.

25. Irrespective of cause, **detail calculations** should be made **for the spread of large and early releases of a large part of the radioactive content** in order to understand the effects on people and environment and test the adequacy of response systems on- and off-site in such a case.