Public Meeting: Post-Fukushima stress tests peer review
Brussels, 8 May 2012

Opening

Mr. Majerus from the Ministry of Health, Luxemburg, who was chairing the event, welcomed everyone to the second public meeting on the post-Fukushima stress tests peer review. The event was organised by the European Nuclear Safety Regulators Group (ENSREG), the European Commission and the Stress Tests Peer Review Board.

The peer review, which was now complete with the publication of the report on 26 April, had brought together more than 80 experts from across 24 countries. Although the stress test and peer review process is complete, many follow-up initiatives are already in preparation to ensure continuous improvement in nuclear safety.

Mr. Majerus gave an outline for the day's event and explained that the meeting would give an opportunity for the audience to discuss the report, ask questions and hear responses from experts. Mr. Majerus explained that during the day there would also be an opportunity to look at some of the written comments that were submitted via the ENSREG website before the event.

The audience was reminded that the event was intended as an opportunity to share opinions and views and it was important to listen and consider the opinions put forward.

Greetings from the Presidency of the Council

Mr. Schmidt, Minister Counsellor for the Danish Ministry for Foreign Affairs, began by reminding the audience that the stress test process was the first exercise of its kind and the results will be used to enhance nuclear safety. He then briefly outlined the stress test process and thanked the ENSREG Chair for his management of the work.

Presentations on the stress tests and peer review process

Background

Mr. Stritar, ENSREG Chair, explained that the stress tests had been a very intensive campaign of work and had achieved a great deal of valuable work in the last 12 months since the term stress tests was first identified. He outlined the roles of ENSREG and the Western European Nuclear Regulators Association (WENRA) in the work and explained the stress tests and peer review process. He reminded the audience that after Fukushima immediate steps were taken across Europe to assess the ability of nuclear plants to respond to external hazards and that a number of improvements were

identified and actioned. Some further issues identified in the stress test report are still to be taken forward, i.e. off-site emergency preparedness.

Mr. Wanner, WENRA Chair, described the three-step process that had been developed by WENRA and ENSREG to address safety issues following events at Fukushima. He noted that the schedule for this work was compressed to ensure that action could be taken quickly where issues were identified. All countries had cooperated and worked hard to meet the challenging deadlines. Mr. Wanner stressed that it is important that we use the lessons learnt and improve safety levels as necessary.

Summary of the Peer Review Process

Mr. Gurgui, Vice Chairman of the Peer Review Board, began by reminding the audience that nuclear accidents do not just impact on the country of origin but have far wider implications. This makes it more important to share experiences and goals. He outlined the stress test peer review process which involved a review for all countries. The schedule developed ensured a common aim to review nuclear sites beyond design basis for extreme natural hazards events. The work was intensive and, for example in Spain alone over 150 experts were involved in preparing the results of the stress test and peer review with 22 senior experts working exclusively on the stress tests. It was also noted that significant interest was received from countries outside Europe who were following the stress tests process.

General Quality of National reports

Mr. Krs, Project Manager for the Peer Review Board, explained that this was the first time this type of review had taken place. He noted the professional conduct of the whole exercise that demonstrated strong commitment of all involved parties (operators, regulators, other expert organizations) to learn from Fukushima event and identify possible safety improvements. He noted that the peer review concluded that all countries had taken significant steps to improve the safety of their plants, with varying degrees of practical implementation, due to differences in the national approaches and the pre-existing situation. The peer review showed an overall consistency across Europe in the identification of strong features, weaknesses and possible ways to increase plant robustness in light of the preliminary lessons learned from the Fukushima disaster. As a result of the stress tests, significant measures to increase robustness of plants have already been decided or are considered. Such measures include provisions of additional mobile equipment to prevent or mitigate severe accidents, installation of hardened fixed equipment, and the improvement of severe accident management, together with appropriate staff training measures. In many cases, important modifications are being prepared for the near future.

Main Results of the Peer Review

Mr. Jamet, Chairman for the Peer Review, provided an overview of the general conclusions of the stress test peer review. He explained that strong

points, weak points, and recommendations were provide for each country in the country reports. At the European level, he described the four main conclusions of the stress test peer review and provided examples.

Firstly, the peer review board recommends that European guidance on assessment of natural hazards and margins be developed. Overall, the compliance with the ENSREG specification was good with regard to design basis for earthquake and flooding. However, there was a lack of consistency identified with respect to natural hazards where significant differences exist in national approaches and where difficulties were encountered with beyond design margins and cliff-edge effects assessments.

Secondly, the Peer Review Board recommends that ENSREG underline the importance of periodic safety review. In particular, ENSREG should highlight the necessity to re-evaluate natural hazards and relevant plant provisions as often as appropriate but at least every 10 years.

Thirdly, the Fukushima disaster highlighted the importance of the containment function, which is critical, as the last barrier to protect the people and the environment against radioactive releases resulting from a nuclear accident. This issue had already been extensively considered, as a follow-up of previous accidents, and possible improvements had been identified. Their expeditious implementation appears to be a crucial issue in light of Fukushima accident.

Lastly, the Peer Review Board found that implementation of measures allowing prevention of accidents and limitation of their consequences in case of extreme natural hazards should be considered by national regulators. The Fukushima disaster has shown that defence-in-depth should be strengthened by taking into account severe accidents resulting from extreme natural hazards exceeding the levels taken into account by the design basis and current safety requirements applicable to the plants. Such situations can result in devastation and isolation of the site, an event of long duration, unavailability of numerous safety systems, simultaneous accidents of several plants including their spent fuel pools, and the presence of radioactive releases. Mr. Jamet provided examples of such possible measures, noting that they are also detailed in the report.

Mr. Jamet also noted that roughly 500 man-years have been devoted to completing the stress tests and peer reviews.

Perspectives on the Stress Tests and Peer Review

Mr. Poncelet from FORATOM shared his views on the process. FORATOM were involved in setting up the stress tests process which was also endorsed by industry leaders. It is important that industry is seen to act and follow up any actions identified to improve nuclear safety. The ENSREG method for assessment was strict and challenging and was viewed by others outside the process, i.e. Russia and Japan requested to be kept informed so they could promote the principals and results. Industry was ready to support the

challenge and welcomed plans to improve safety. To ensure public confidence, accident implications need to be controlled. He stated the work of the last 12 months has demonstrated the commitment of operators to safety.

Mr. Stricker from World Association of Nuclear Operators (WANO) stated that although not an advocate of nuclear power, WANO advocated nuclear safety. Mr. Stricker outlined actions taken by WANO following Fukushima. Their goal was to ensure that all members would check that each worldwide station would be ready to respond to an event caused by either natural or external hazards. This goal is shared by both IAEA and INPO (Institute of Nuclear Power Operations). They also want to increase the quality and frequency of peer reviews of every station. Mr. Stricker stressed that it was important not to increase the burden through regulation but to help operators to take increasing responsibility.

Mr. Vila d'Abadal l Serra from Group of European Municipalities with Nuclear Facilities (GMF) gave his perspective as representative for local authorities and mayors in civil society. GMFs role is to promote EU safety standards across countries with nuclear power. GMF have developed some good practice for analysing information, identifying what action is needed and communicating to those who will be affected. Mr. Vila d'Abadal l Serra stressed that this helps to build confidence at local level. One of the most important factors for them in the stress tests process is people's security. Safety can always be improved and they welcome the lessons learnt from the stress tests process. GMF will continue to provide information and reassurance to the public and await the outcome of the planned work on emergency preparedness.

Mr. Haverkamp from Greenpeace supported the constructive input from the stress tests but felt the process had failed to restore public confidence. Greenpeace considered that public involvement would only continue if the public could see results from their input. He would have welcomed more discussion on the report and considers that some factors were not included, i.e. aging reactors. Mr. Haverkamp suggested more public involvement through early consultation to allow time to express views as this was an important next step in the process. Mr. Haverkamp ended by saying the report showed that safety systems cannot guarantee safety and invited ENSREG to pass this view onto the European Council.

Ms. Lorenz explained that Friends of the Earth would welcome more public involvement in discussion and decision making. Ms. Lorenz outlined a role for environmental impact assessments to be used when considering lifetime extensions for plants. They also support a view that aging plants should be phased out rather than extending operation.

Mr. Lyons outlined the International Atomic Energy Agency (IAEA) mission in response to the accident at Fukushima which could be found in the 'IAEA Action Plan for Nuclear Safety 2011'. As an international body they conducted a fact finding mission to Fukushima. The mission reviewed safety margins to identify areas for attention after Fukushima. The lessons learnt where shared

with IAEA Member States to enhance nuclear plants against natural hazards, i.e. earthquake etc. There is still more to be learnt from Fukushima and from the future experts meetings. Any lessons will be built into safety standards to be accepted worldwide. Mr. Lyons noted the strong voluntary move to improve safety and a commitment to deliver to challenging schedules. Mr. Lyons concluded that IAEA commended the work done and felt that the stress tests were a good benchmark to improve nuclear safety worldwide. IAEA will continue to be involved and will be providing advice to the debate on emergency preparedness.

Conclusion

After the second round of questions Mr. Majerus summarised the final conclusions derived from the event. The conclusions are provided separately in written form and can be found on the ENSREG web site at the following address:
http://www.ensreg.eu/sites/default/files/13-Conclusions.pdf

Questions and answers on the Stress Tests and Peer Review

There were two question and answer sessions, moderated in the morning by Mr. Jamet and in the afternoon by Mr. Ulbak, of the National Institute of Radiation Protection, Denmark.

A summary of both sessions is below.

The two combined question and answer sessions took over two and a half hours. A number of questions were raised on a similar theme so they have been addressed under topics. Some of the questions posted to the ENSREG website from 26 April to 3 May are also addressed here.

Topic: Peer Review Process and Context

Questions

- Is the stress test process finished?
- Who will ensure the lessons learnt are carried out?
- Will you be publishing the questions drawn up by the peer review teams?
- There was a large earthquake at the Japanese Kashiwazki-Kariwa nuclear power plant in 2007 and there was an IAEA fact finding mission following the earthquake. Did the Fukushima plants have to correct mistakes or are standards not adequate?

Response

- The process was completed when the report was adopted by ENSREG on 26 April.
- National regulators will instruct operators to take necessary action. This will be observed internationally through various instruments including the IAEA

IRRS and OSART missions and the Convention on Nuclear safety. ENSREG is also developing an action plan to organize further sharing between regulators on future actions.

- Questions posed by reviewers were not made public and were never intended to be made public.
- According to the public reports following the IAEA missions preformed as a follow up of the large earthquake which affected the Kashiwazki-Kariwa nuclear plant, the earthquake that occurred in 2007 was significantly larger than the design basis at this site. However, there was very little damage to the nuclear island and safety systems due to the large margins used in the construction of the structures. Following the event and the IAEA missions, numerous actions were taken in Japan and around the world. One of the actions included a re-evaluation of the design basis earthquake for all Japanese sites, including the Fukushima site. The earthquake that occurred at Fukushima in 2011 was very large, but it was similar to the design basis earthquake that was calculated after the 2007 Kashiwazki-Kariwa event and there was very little damage to the safety systems at the plant. The real cause of the Fukushima accident was the tsunami and subsequent flooding which were not well predicted. One of the recommendations of the peer review was to develop improved guidance on all external hazards and related margins.

Topic: Peer review report

- Why do you not name specific countries or reactors in the report?
- Where is the evidence and documents used to support judgements made in the report?

Response

- The main report was designed to share information, draw conclusions and make recommendations at the European level. Site specific details are available in the country reports.
- The peer reviewers reviewed the information provided by the national regulators, asked questions and drew conclusions. By its very nature, a peer review among regulators is intended to share practices and draw conclusions on the information provided. The evidence is based on the expert judgement of the peer reviewers and is based on the interactions with the national regulators. Whenever possible, the IAEA safety standards and WENRA reference levels where used as they represent consensus on best international practices.

Topic: Further work

- Who will pay for further work identified in the report to be carried out?
- Will additional research and studies be carried out to explore issues raised in the report i.e. core melt management?
- Can we rely on operators to carry out additional work?

- Is it worth spending money on improving an aging plant when it would be cheaper to shut them down?
- Will the need for emergency planning be explored?
- Who is responsible for emergency measures outside of plants?
- Will all Directorates General (DGs) be involved in future work?
- Will ENSREG explore if plants with deficiencies should be closed?

Response

- The cost of plant improvements was not a part of the stress tests. Modifications required to improve the safety of nuclear plants will be paid for by the plant operators. Further actions recommended to Regulators will be financed through the usual national mechanisms providing resources to Regulators.
- Yes. Where new issues have been identified, they will be explored through research or further investigation.
- The operators, under the oversight of national regulators, can be relied upon to perform the additional work. Various international instruments, like the IRRS and OSART missions, as well as WANO missions then confirm the effectiveness of implementation of required work.
- Decisions associated with the pros and cons of investing money on aging plants is not the responsibility of the stress tests, ENSREG or national Regulators. These decisions need to be made by the plant operators.
- Emergency planning is one of the actions to be taken forward and will be reported on separately.
- Responsibility for off-site emergency planning across Europe is diverse. There are a range of authorities including the police, security service, fire and environmental authorities.
- According to the statements of Mr. Faross of the European Commission, it appears likely that several DGs may have a role in offsite emergency preparedness. All relevant DGs have been invited to participate and contribute.
- ENSREG's plans did not include assessing plant safety directly. Reports were written by national Regulators. There is no intention to develop a super Regulator.

Topic: Public engagement

- Were there local public meetings to discuss the national stress test reports?
- What was public input into the process?

Response

- Several regulators sponsored public awareness events while others have invited questions directly. A first public meeting was held in Brussels in January. Like the meeting today this gave an opportunity to the public to contribute during the meeting or via the ENSREG website.
- The public took part in the question and answer sessions at the public meetings and via the ENSREG website. A number of issues raised by the

public at the meeting in January were taken forward and included in the final report published on 26 April. The public were encouraged to pose specific questions to regulators.