

RAPORTEURS' REPORT SWITZERLAND

ENSREG NATIONAL ACTION PLANS WORKSHOP

1.0 ASSESSMENT OF THE STRUCTURE OF NATIONAL ACTION PLAN

1.1 Compliance of the national action plan with the ENSREG Action Plan:

Switzerland followed the Structure proposed in the ENSREG Action Plan. National EU Stress Test results were considered as well as ENSREG and CNS aspects. The findings from the follow-up plant visits were also addressed. The aspects from the CNS Summary Report were not treated in a separate manner; instead they were addressed in the responses to the ENSREG Action Plan.

2015 No changes

1.2 Adequacy of the information supplied, taking into account the guidance provided by ENSREG.

The Switzerland specific NAcP has followed the ENSREG guidance very closely. The report used a consistent format of summarizing the “ENSREG recommendation”, one or more paragraphs describing “what has Switzerland done so far”, and a further one of more paragraphs describing “what will Switzerland do in the future”.

2015 Update: The report has given an update against the ENSREG and CNS recommendations, and provided a cross reference to ENSI's own action plan. In most cases there is a clear commentary giving an update from the 2013 position and reporting on progress to 2014.

2.0 ASSESSMENT OF THE CONTENT OF NATIONAL ACTION PLAN

2.1 How has the country addressed the recommendations of the ENSREG Action Plan?

Following the events at Fukushima, the Swiss Federal Nuclear Safety Inspectorate (ENSI) issued three formal orders on the operators of the Swiss NPPs to implement immediate measures and to conduct additional reassessments. Subsequently ENSI issued a fourth formal order in Jun 2011 instructing the Swiss operators to take part in the EU Stress Test. All aspects from the “national action plan table 2012-10-16” from the NAcP guidance document, compiling the ENSREG and CNS recommendations and suggestions, have been covered. All of the topics from the ENSREG compilation of recommendations and suggestions have been responded to. The Swiss National Action Plan – Follow Up of the Peer Review 2012 Year-End Status Report along with the self-identified items covered in other referenced reports, notably the “Action Plan Fukushima” address all of the topics.

2015: A fifth order was issued on 10 January 2012 in which the most urgent open points identified by ENSI during the European Stress Tests review had to be addressed by the Swiss operators. A sixth order was issued on 22 April 2013 requiring the Swiss operators to perform analyses and submit improvement options related to hydrogen management.

2.2. Schedule of the implementation of the NAcP

The implementation of improvement measures identified at European and National level in the aftermath of Fukushima is mostly clearly scheduled with much work already done, more due in 2013, but some work extends out to 2017, and a proportion of activities do not have end dates specified (although it is recognized that this may be due to uncertainties in the workscope).

A significant programme of improvements, notably the development of a large national reserve store of accident management equipment at Reitnau completed in June 2011, is already complete.

The actions initiated in the wake of Fukushima and described in the yearly updated "Action Plan Fukushima" were originally scheduled to be completed by 2015. Because of some major backfitting projects related to additional requirements for long term operation, the schedule has been extended and full implementation is expected by 2017.

2015 There has been progress in almost all of the topics through 2013 and 2014, with a number of topics now transferred into normal regulatory supervisory processes. The 2015 update to the Swiss Action Plan Fukushima confirms that there are no open items. However, a number of studies have been completed by the licensees and need review by ENSI in 2015 before final regulatory orders will be generated and plans for modifications finalised (if needed).

No delays are reported to be due to any form of de-prioritisation.

2.3 Transparency of the NAcP and of the process of the implementation of the tasks identified within it

The NAcP provides clear and comprehensive information on how the NPPs in the country will be improved in the aftermath of Fukushima according to the recommendations and suggestions of the European Stress Tests and the conclusions of the CNS process. The NAcP and the "Action plan Fukushima" are accessible on the regulator's website.

2015. The plan and the annual updates are clear on progress, the annual updates have continued and are a good example of transparency

2.4 Commendable aspects (good practices, experiences, interesting approaches) and challenges

The Swiss have been engaged in a SSHAC Level 4 review of seismic hazard (exceedance frequency 1E-4/y, mean) for the NPPs for a number of years, ahead of the events at Fukushima, this is envisaged to complete in 2013.

The Reitnau bunkered facility containing accident management (AM) equipment is a good practice, and was ready in a quick timescale. There is further work identified to fully implement it into the emergency response plans. A national emergency drill in this respect is planned for 2013.

ENSI operates an automatic dose rate monitoring system around the Swiss NPPs with measurements publicly available online. All Swiss NPPs connect to an emergency response information system which during an accident provides data to ENSI, the national emergency operations centre and to German and EU authorities.

The provision of 7 layers of AC power generation (3 operational, 2 backup, 1 local AM support, 1 external AM support) at all NPPs is seen as a good practice.

The national response under "Action Plan Fukushima" provides a clear description of the comprehensive work identified by ENSI and the NPPs ahead of the ENSREG Stress Test. The development of a multi-agency official working group to review emergency preparedness measures in case of extreme events in Switzerland (IDA NOMEX) is seen as a good practice and provides greater openness and transparency.

The issue reported in the NAcP of whether restoring containment integrity during shutdown in the case of a total SBO represents a time-critical measure may need further emphasis by the Swiss regulator ENSI.

2015 The Reitnau facility has been no-notice tested. Work is now in hand for the containment integrity restoration under SBO - on the licensee's initiative, a backfitting modification has been initiated (to be completed by Summer 2015) for the plant for which this open point was identified. Progress with IDA-NOMEX activities was confirmed at the workshop with the expectation that it can be closed by the end of 2015.

The self assessment and subsequent work implemented to improve safety culture at ENSI is seen as a good regulatory practice. ENSI is commended for undertaking this activity and for acting on the results.

The work to reinforce the upstream dam at one NPP is a good example of reducing hazard at source.

2.5 Technical basis related to main changes and relevant outcomes of studies and analysis

Generally most of the work has followed the schedules envisaged in the 2013 Workshop. There were a few exceptions which are described below.

Some delays to the full implementation of upgrades of cooling to Spent Fuel Pools are described for specific plants. The reasons for the delay were clearly articulated in the workshop and questions and answers (Q&A), and were mainly associated with long lead items such as qualified equipment. ENSI has required compensatory measures and these were explained in the workshop and Q&A.

The backfitting of improvements at one plant for flooding protection were changed due to an imminent closure date. Compensatory measures were introduced, including reinforcement of the upstream dam, and other sources of cooling water. ENSI provided a clear discussion of why the changed measures were satisfactory for a reduced period of operation, and also clearly explained that if the NPP life was subsequently extended, all of the original modifications proposed for long term operation would need to be implemented.

Many licensee studies were completed and submitted to ENSI in 2013, 2014 and early 2015. ENSI now has a major programme of work to review these studies and to decide on and make subsequent regulatory orders. These are planned for the end of 2015. Topics include flooding studies, the seismic hazard re-evaluation (Pegasos Refinement Project), handling of large volumes of water, etc. ENSI is not expecting significant changes to the current improvement programme to arise from these studies, but is prepared should they be needed. It was noted that ENSI prioritised studies and assessment such that ENSI's reviews of the most important issues have already been concluded.

The studies on seismic auto-trip were completed and have been reviewed by ENSI. The potential benefits and detriments in terms of risk were described and it was clear at the workshop that the benefits for NPPs in Switzerland would be very small – due in part to the seismic hazard conditions – and so the decision not to require a retrofit was justified.

Another study of interest to the workshop was the output from one of the newer NPPs which indicated that the seismic margins were not as high as at some of the older – and backfitted – plants. The plants are currently implementing improvements in seismic margins at the newer sites.

3.0 PEER-REVIEW CONCLUSIONS

The Swiss regulator ENSI has provided clear and transparent updates to its National Action Plan every year. The plan shows that the early phases of work to improve accident management equipment, its storage and distribution, maintenance and application were all completed in the early years post-Fukushima. Early years work also included enhancements

to cooling water supplies and power supplies as well as control and instrumentation upgrades. The second phase of work was more reflective and considered further studies on flooding, seismic hazard re-evaluation, severe accident management measures, etc. This phase is now also complete and ENSI has finished its review. Corresponding backfit measures have been implemented (e.g. backfit of special emergency water intake against sediment clogging at one plant, backfit of the seismic isolation of the special emergency diesel generators at one plant). For the final set of topics, the licensees have submitted their analyses and ENSI is undertaking its review and plans to finish its assessment and issue subsequent regulatory orders (if needed) by the end of 2015. Final upgrade programmes to close out Fukushima findings will then be implemented.

Although almost all work at the sites has proceeded to plan, some delays or changes were noted by ENSI and challenged by the peers at the workshop. In particular, delays in long term improvements at spent fuel pools were described and the reasons explained, along with a clear explanation of compensatory measures required by ENSI. Some actions are closed as Fukushima action items, but have been transferred by ENSI into normal supervisory activities until the final installation of equipment – such as PARs – is completed. ENSI provided a clear list of outstanding installations and improvements (with most now completed, some in the next year, and the very last complete in 2020). ENSI was also clear in its explanation that the regulatory assessment of submitted studies could yet require further improvements, this will be clarified by the end of 2015 and, should the need arise, a final programme of work developed subsequently.

In 2013, several commendable practices were identified, including the development of the national accident management equipment store at Reitnau, the multi-agency review organization (IDA NOMEX), all NPPs having 7 layers of AC power generation, and the implementation of the complex seismic hazard re-evaluation project PEGASOS. After the 2015 workshop, the no notice test of the Reitnau facility, the regulators' self-assessment of safety culture and the work to reinforce the upstream dam at one NPP were also considered to be commendable practices.

Overall, the Swiss approach to continuous improvement was clearly described. Many significant improvements have already been completed. The final package of studies requested by ENSI have been completed by the licensees and are under assessment by ENSI which is planned to be complete in 2015, further work could result, and will be subject to regulatory decisions and reported by ENSI.