



New builds in Switzerland: current Situation (September 2009)

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According to the Nuclear Energy Act of 2003 the licensing of new builds in Switzerland is a 3-step process in which the applicant has to sequentially submit requests and get grants for a general license, a construction license and an operating license. It has been estimated that the whole process may take 16 to 18 years until a new unit can start operating in Switzerland.

The first step, the so called general license is essentially a site license, but it also serves the purpose of forming a public opinion. In fact the general license, as issued by the Swiss government, has to be approved by the Swiss parliament and it is subject to a countrywide public vote.

For the general license the applicant has to select a site and submit a comprehensive site evaluation that allows defining the site specific hazards which the new NPP has to be design against. Very few details about the reactor that the applicant proposes to build have to be provided, namely indications about the reactor type (e.g. LWR), its thermal power, its main cooling system (e.g. cooling tower) and the arrangement of the main buildings. Besides the technical suitability of the site, an environmental impact assessment has also to be provided by the applicant.

By the end of 2008 three general license applications have been submitted by the Swiss electrical companies ALPIQ Holding Ltd., the Axpo Group and BKW FMB Energie Ltd. The proposed sites are already existing NPP sites where one to two units are in operation since 1979 (Gösgen NPP), 1969 resp. 1971 (Beznau I and II NPPs) and 1972 (Mühleberg NPP). For the sites of Beznau and Mühleberg the proposed new builds are explicitly aimed at providing power generation in substitution of the older units.

The assessment of the nuclear safety aspects of the general license applications is being carried out by the ENSI and the safety evaluation reports for the three applications are expected to be issued by the autumn 2010. The Federal Office for the Environment is in charge of doing the evaluation of the environmental aspects related to the proposed new builds. The site characteristics that need to be discussed in the application are:

- Geography and population distribution
- Traffic routes and industry (includes aircraft crash hazards)
- Logistics and construction site
- Meteorology
- Hydrology and ground water
- Geology, foundation material and seismology
- Connection to the power grid

The hazards originated by a combination of external events shall be investigated too. Deterministic and probabilistic arguments need to be considered as well as the newest data and state-of-the-art models.

Besides the general license, the applicants are pursuing the preparation work for the construction license. The main topic in this phase is the definition of the requirements on the design which will be included in the call for tenders. The ENSI is also devoting some resources to this subject building an internal know-how on the most common reactor designs of generation III/III+ and planning a rethinking of some of its guidelines, e.g. the safety classification of structures, systems and components

From the perspective of a small nuclear country as Switzerland and a correspondingly small nuclear regulator as the ENSI it is of vital importance to be able to rationalize resources and don't do duplicate work. Hence for the ENSI it is important to share knowledge with other regulators and lift some results that have already been produced. Though the undergoing ENSI activities for new builds concentrate in the current phase on siting

issues and the work on design requirements has not started at full speed yet; the ENSI provides for existing reactors quite advanced work in some areas (e.g. PSA), which could be beneficial also for new builds. As a further point it should be noted that the interaction of the ENSI with the vendors runs officially always through the applicants. Taking part in a multinational vendor inspection or auditing program would give the ENSI the possibility to gain additional insights in areas like quality assurance and project management which have proven critical in the current new builds projects.

In more general terms it is certainly in the interest of the nuclear regulators community to have a common understanding and possibly an agreement on regulatory practices applied to critical issues like external events, passive systems, digital I&C, etc. This would equal to define a sort of state-of-the-art from the regulatory point of view as a counterbalance to the 'reactor standardization' that has been pushed forward by the vendors.