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1.	Bulgary	3	19	Reference: Item 4.1.2 Progress in the implementation and updating of the NAcP: • „In early 2014 the nuclear utilities completed the implementation of the new Emergency Support Centre (ESC), which is capable of supplying trained personnel and equipment to any Spanish nuclear power plant in less than 24 hours.“ Questions: 1) How and where is the personnel from the ESC trained ? 2) What is the number and qualification of this personnel? 3) What type of equipment is envisaged to be delivered to NPPs and how?	1) The ESC staff is composed of a group-head, being permanently at the ESC headquarters (near Madrid), and other members working at each of the Spanish nuclear sites. The training is composed of a generic part, provided by the company responsible of the ESC management, and a plant specific training received at the plants. 2) The number of people is one group-head plus one person for each of the sites (at this moment accounting for a total of six members). The qualification includes training in plants characteristics, radiological protection and accident management, with the emphasis put on supporting the implementation of local emergency recovery actions. 3) The ESC has pumps and diesel generators available which can be delivered either by truck or by helicopters (maximum time 24 hours).
2.	Bulgary	3	A4	Reference: Table A-1.1, Type I14, Requirement: Study of technology alternatives for the filtered containment venting system – study completed and implementation on site is on going by 31/12/16 Question: What is the chosen alternative for the filtered containment venting system that is being implemented?	Filtered Containment Venting Systems are not installed yet in Spanish NPPs. After the studies of the technology alternatives done by the utilities (taking into account the technical criteria issued by the regulator, CSN), the following have been selected: – For Trillo and Almaraz NPP: CCI Wet FCVS – For Ascó and Vandellòs II NPP: AREVA Combined Ventury Scrubber NOTE: For Cofrentes NPP the technology has not been decided yet, due to the fact that the implementation schedule is not the same than for the other NPP.
3.	Bulgary	2	A2	Reference: Table A-1.1, Type I4, Requirement: Implementation of new equipment (fixed or portable) to cope with prolonged SBO conditions (including to replace primary circuit inventory), completed 2014 Questions: 1) What type new equipment has been implemented “to replace primary circuit inventory”? 2) Do you mean replacement of primary circuit components or refilling the primary circuit and recovery	1) The new equipment includes: Portable diesel engineered pumps, which can inject to the RCS at low pressures (typically not higher than 20 kg/cm^2). These pumps can also be used to deliver water to other critical points: SFP, Containment spray, Suppression Pool (BWR). Hoses to connect the portable pumps and fixed quick connection points to inject through auxiliary systems connected to the RCS. Alternative capacities to use critical instrumentation under prolonged SBO conditions and loss of DC power. Diesel generators to provide power to mechanical and electrical critical components.

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				of coolant inventory?	2) Refilling the primary circuit coolant water inventory.
4.	France	2.2	p19	The meaning of the following comment should be clarified: “In summary it may be stated that no significant aspects are appreciated that might have an impact on the basic objectives of the Plan”. Does it means that there is no additional important mean to implement and that the provisions, modifications and procedures coming from the plants analysis are consistent with the initial planning for safety and robustness improvement of the NPPs?	The actual idea behind this statement is that the very minor changes or modifications in the scope or schedule of the previously anticipated actions have no impact on the basic objectives of the national Plan. In relation to the additional studies required by the CSN -clearly a different aspect of the NAcP- the chapter 4.1.4 contains a summary of the results obtained.
5.	France	2.2	p19	Mention may be made of the following relevant aspects that have now been completed: Implementation at all the nuclear sites of mobile equipment (pumps, electrical generators, etc.) allowing for quick connection to the fixed systems of the plants. What should be understood by "quick connection" in case of SBO? Less than 10 hours?	A maximum time criterion for these quick connections has not been explicitly fixed. However the CSN required the licensees to follow the approach of PLUG&PLAY for the implementation of new mobile equipment. According to this requirement, the tests already done at the plants show implementation times much less than the questioned 10 hours. To provide with quick connections, design modifications have been implemented in the plants in order to: – Allow a fast and easy connection of hoses coming from the portable pumps. For instance, to allow for RCS water injection, fixed connection points to inject through RCS auxiliary systems are now available. – Allow a fast and easy connection points for cables coming from the electrical mobile generators. Specific operating procedures are available, with the appropriate training, verification and validation of strategies.
6.	France	2.5	p19	Also already completed: Verification and, where appropriate, reinforcement of the seismic resistance capacity of equipment of importance for accident management to a “seismic margin” of 0.3 g (PGA). What type of structural elements and components were reviewed? What is already completed: the identification of the equipment to reinforce or the next step which is the reinforcement by itself?	According to ATTACHMENT 1 of the Spanish NAcP (Requirements included in the CSN ITC-ST Instructions): *I1.- Implementation of the necessary improvements to increase the seismic resistance capacity of equipment relating to the following to 0.3 g:* - *The two “safe shutdown paths” defined in the IPEEE* - *Containment integrity* - *Mitigation of station blackout (SBO) situations* - *Severe accident management* - *SFP integrity and cooling (including liner & racks)* The identification of the equipments and components to be reinforced is

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					already completed. In the original NAcP (December 2012), actions to be implemented in the short, medium and long term (2012, 2014 and 2016) were already identified. Currently all actions to increase the seismic resistance capacity have been implemented, except actions scheduled for the “long term”: - Implementation of the Alternative Emergency Management Centre (AEMC). - Passive Autocatalytic Recombiners (PAR) - Containment Filtered Venting System at all the NPPs. Implementation of the filtered containment venting systems will be carried out during the 2016 and 2017 refueling outages. The Spanish BWR plants will also incorporate this improvement, although they were already fitted with a hard vent.
7.	France	2.3	Table A-1-1 p.A3	“Analysis of the suitability of the human resources currently assigned to the ORE (emergency response organization). Implementation of improvements deriving from the analysis.” This requirement doesn’t refer to multiunit events as it was the case in the initial NAcP. Shall we consider that this reference is implicit or is there a change in the requirement?	It was fully implicit in the CSN’s requirements. Consequently the analysis carried out by the two multiunit plants has adequately considered this requirement.
8.	Hungary	3	20	It is mentioned that the BWR plants are already fitted with "hard vent". Some explanation would be useful to clarify the relation of that venting system to the severe accident filtered venting.	In the Spanish BWR NPPs, Hardened Venting Systems were implemented in late 80’ and currently are not filtered (hard vent). It is intended for heat removal, containment pressure relief and containment hydrogen concentration. Their use is anticipated in different situations considered in Emergency Operating Procedures and Severe Accident Management Guidelines (EOP-SAG). Filtered Containment Venting System (FCVS) has been required by the Spanish regulator to be implemented in all the NPPs, additionally to any other possible filtering capability, such as suppression pool scrubbing in BWR plants. The details of the FCVS to be implemented in BWR units are not fully defined yet, but it is foreseen that the existing Hardened Venting System will be modified to implement a Filter for severe accident conditions.
9.	Hungary	1	20	Could you clarify what kind of uncertainties are of	The uncertainties have arisen on comparing dam break criteria applied in

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				concern in relation to the dam rupture scenarios?	the analyses carried out by the licensees and criteria applied in the 'Dam Emergency Plan' (the latter being under the responsibility of the Ministry of Agriculture, Food and Environment). Basically, criteria regarding the size and the duration of a potential dam rupture.
10.	Netherlands	3	Ch4/p19	What are the design values which are specified for the ESC's in Spain? How were these values determined?	As discussed in the Final Report: *Stress tests carried interest out by the Spanish Nuclear Power Plants* (Dec. 2011), in accordance with the practice of application adhered to in the international seismic standards, in the seismic design of the Spanish nuclear power plants, earthquakes have been contemplated on two step levels of severity: a maximum level constituting the 'design basis earthquake' or DBE, and another lower level corresponding to the 'operating basis earthquake'. The DBE is the maximum earthquake that, given the historical data and the characteristics of the terrain, it is thought might reasonably occur at a given site, causing the maximum ground movement assumed in the design of the facility. It presents a very low probability of being exceeded during the entire service lifetime of the installation and is associated with maximum safety requirements. In the event of this earthquake occurring, the plant structures, systems and components (SSCs) required to guarantee the integrity of the reactor coolant boundary and the capacity to shut down the reactor and maintain it in a safe condition would remain in operation, as would the capacity to prevent or mitigate accidents potentially causing the uncontrolled release of radioactive effluents. It should be pointed out that, as indicated in the Spanish Standard on Earthquake-Resistant Construction (2002), the calculated seismic acceleration applicable to the sites of the Spanish nuclear power plants is estimated at between 0.05 g and 0.08 g; however, the value that was used as the DBE at the different Spanish plants ranges from 0.10 g to 0.20 g.
11.	Netherlands	1	Ch4/p19	Can Spain list the most important modifications and/or investments that are necessary because of the 'seimic margin value'(RLE) of 0.3 g? Why is this value the same for all plants?	As regards the margins of safety with respect to the occurrence of earthquakes, considerations have been based on the fact that seismic IPEEE (*Individual Plant Examinations for External Events*) analyses were already available in Spain for all the operating plants much before the Fukushima event. The IPEEE analyses, carried out in the 90's, were oriented towards the identification of plant vulnerabilities to external events beyond the design bases. In accordance with the seismic margin methodologies applied (EPRI

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					and US-NRC), the aim was to determine the seismic capacity of the plant known as the “high confidence of low probability of failure” (HCLPF) capacity. For this purpose a Review Level Earthquake (RLE) was established by the CSN in the initial analyses, corresponding to a PGA of 0.3g (with consideration given to an adequate review margin for all the plants independent from their seismic design basis, between 0.1g and 0.2g,), compliance with this value not being required. Within the stress test program, the scope of the seismic margin analyzed has been extended to include the SSCs required to guarantee the integrity and cooling of the spent fuel pool. Also, among the measures aimed at guaranteeing greater plant robustness in response to seismic events, the licensees have revised, or proposed the revision of, the margins of the equipment used to address station blackout (SBO) and severe accident situations. In all these cases, the licensees have verified the possibility of assigning a seismic margin equal to or greater than 0.3g to these SSCs or, otherwise, have proposed the additional measures required for compliance. The most important modifications that are necessary because of the 'seismic margin value'(RLE) of 0.3 g are the following: - Reinforcement of flat bottom storage tanks - Anchorage of heavy equipment - Block walls - Non-ductile structural - Anchorage of Electrical & control cabinets - Spatial interactions - Relay chatter The CSN has considered that, taking into account the different circumstances in the definition of each plant specific SSE, such a margin of 0,3 g is a good envelop for the additional resistance envisaged after the European Stress Tests process.
12.	Netherlands	3	Ch4/20	In 4.1.4. Analysis of H2 in annexed buildings: what actions have been proposed?	In the calculations, the new systems for severe accidents that will be installed have been taking into account, in agreement with the regulator requirements (notably: Passive Autocatalytic Recombiners and Filtered Containment Venting System). In all the cases, the results of the calculations performed by the licensees show no risk due to H2 concentrations in adjacent buildings. So, no additional measures have been proposed.

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					CSN evaluation is currently ongoing.
13.	Netherlands	1	Ch4/p20	In 4.1.3. no explanation is given for the delay of ITC issuing. Can you please provide this information.	The scope of seismic reanalysis being required, within the global content envisaged, might be focused through very different technical options. The CSN has been considering different alternatives from his technical staff and assessing their adequacy with the established objectives. Priorities have also been considered regarding the whole efforts required to the plants to perform further analyses and implement improvements. Every case, the risk-informed criteria have been applied and the most effective actions in order to timely improving the robustness of plants have been taken into account and then prioritized. In this way, the implementation of the necessary improvements to reach a seismic margin of 0.3 g has been prioritized over performing a new seismic hazard analysis. Right now the CSN is very close to launch a seismic-ITC which will include, for each site, requirements in two steps: first to obtain complementary and detailed information in the site vicinity (paleoseismological and 'site effect'), and then to update the seismic hazard analysis.
14.	Netherlands	3	Ch4/p21	Regarding section 4.1.4, could you explain what difficulties were encountered with the scarcity of international experience?	The scarcity of international experience is related to the current situation of the ongoing generic developments of Shutdown Severe Accident Management Guidelines (SSAMGs) as current generic SAMGs do not cover yet shutdown situations. Westinghouse and General Electric Owners' Groups SAMG are implemented in the Spanish NPP. Trillo NPP, which is a German designed plant, is at this moment finishing the full implementation of the new German SAMGs.
15.	Netherlands	3	Ch4/p21	With reference to 4.1.5: Can you describe how capacity for handling of large volumes of contaminated water has been realised? Why is international experience mentioned as challenge?	The aim of the implemented strategies is obviously to try to avoid the release of the contaminated water into the environment. If the water has been produced in a building, the liquids should be kept inside. If the water is produced outside of the buildings, for example as a result of the external spray of buildings, it would be kept into the rain sewage system that should have been isolated beforehand. In the particular cases of Almaraz and Trillo NPPs, due to their rain sewage system is not big enough, ponds have been built in order to collect the produced water. Once the situation is under control, the water would be characterized and treated before its final release.

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					The mention to the international experience means that after Fukushima this topic could be discussed at multilateral forums dealing with these post-accident aspects rather than being considered as a country specific issue.
16.	Netherlands	6	Ch4/p21	With reference to 4.1.5: The reference standard as developed by CSN might be a candidate for sharing with other RBs. Could CSN explain in more detail about the contents of this document?	This standard was prepared by the CSN staff and approved by CSN Plenary, and is intended to provide criteria for the regulator evaluation related to the most significant design modifications required after the Fukushima accident to the Spanish NPP. It contains four different annexes. Each annex deals with a different issue : **Annex 1.** General criteria for the evaluation of the design of the post-Fukushima measures **Annex 2.** Criteria for the evaluation of the Filtered Containment Venting System **Annex 3.** Criteria for the evaluation of the Passive Autocatalytic Recombiners **Annex 4.** Criteria for the evaluation of the on-site Emergency Management Alternative Centre
17.	Slovenia	2	A2	Regarding the requirement I3: Which NPPs have possibility for recovery of off-site electrical supply from nearby stations (hydroelectric or other)? Do they have the possibility for black start? Which stations were modified to provide black start possibilities?	All the Spanish NPPs have the possibility of electrical feed recovering with the help of nearby hydroelectric stations (one or more per NPP) for the case of complete and prolonged SBO condition. These situations have already been included in the corresponding protocols signed with the grid operator. The licensees have committed to perform periodical tests (every six years), including black start capability.
18.	Slovenia	3	A4	Regarding the requirement No. I14: What were the results of the study of technology alternatives for filtered containment system? What kind of filtered containment venting system will be (or have already been) installed on Spanish NPPs?	Filtered Containment Venting Systems are not installed yet in Spanish NPP. After the studies of the technology alternatives done by the utilities (taking into account the technical criteria issued by the regulator, CSN), the following have been selected: – For Trillo and Almaraz NPP: CCI Wet FCVS – For Ascó and Vandellòs II NPP: AREVA Combined Ventury Scrubber NOTE: For Cofrentes NPP the technology has not been decided yet, due to the fact that the implementation schedule is not the same than for the other NPP.