	QUESTIONS FROM PUBLIC & STAKEHOLDERS	CSN's ANSWERS
#	**Generic questions from GreenPeace**	---
1.	If the same flaws as in Doel 3/Tihange 2 were to be found at one of the reactor pressure vessels, could these flaws pose a risk to the emergency core cooling measures?	The flaw indications (flakes) were discovered in the walls of the reactor pressure vessel of Doel 3 and Tihange 2 during an in-service inspection (ISI) of the reactor pressure vessel (RPV) by ultrasonic testing (UT) in 2012. This kind of flaws has been identified in Doel 3 and Tihange 2, but based on the verifications done, there is a reasonable expectation they are not present in other EU NPP. According to current knowledge hydrogen flakes may only form during manufacturing of the base metal. The formation of hydrogen flakes is a phenomenon well known to the steel manufacturers and may happen after cooling down the steel from high to ambient temperature, e.g. in the ingot after pouring or in the forged part after the forging operation and heat treatment. Flake formation is driven by the accumulation of hydrogen at segregations or inclusions in the metal. The "flakes" are not considered as "cracks" however they represent a detachment or separation within the material that may have a detrimental effect on the mechanical behavior of the component. The Belgian nuclear safety authorities (FANC and Bel V) decided that the utility must submit a Safety Case to justify the restart of both reactors (detailed information and the dossier elaborated by the Federal Agency for Nuclear Control is available on its web page). In response to the findings in the Belgian reactors, WENRA recommended in 2013 the nuclear safety authorities in Europe to request the licensees to verify the material quality and integrity of the forged RPV, by a comprehensive review of the manufacturing and inspection records, and the examination of the base material of the vessels if considered necessary. Results of this recommendation is also in the WENRA report about "Activities in WENRA countries following the Recommendation regarding flaw indications found in Belgian reactors" available in the FANC and WENRA web pages.
2.	Which recommendation/suggestion by the EC working document, ENSREG, the peer review team, the fact finding team or formulated by the National Action Plan Workshop are not followed up and what is the	As it is well known the National Action Plan (NAcP) is a direct consequence of the EU pots-Fukushima nuclear stress tests. The rational for these actions are derived from the stress tests specifications developed by WENRA, which

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	justification for this decision?	are related to extreme natural hazards, consequences of loss of safety functions and severe accident management. NAcPs describe the actions, identified following the Fukushima Dai-ichi accident, that were taken, planned or implemented and their schedule to improve the safety of nuclear power plants (NPPs). The Terms of Reference for this peer review 2015 NAcP workshop were approved by ENSREG before the end of December 2014. Each Member State shall update its original NAcP to reflect developments since its first issue and the current status of the measures and their implementation. Each NAcP is publicly available at the ENSREG web page and any modification in the NAcP as compared with previous issue is expected to be identified. The updated NAcP has been shared within the framework of ENSREG, to all members and other participating countries. The comparison with the NAcP schedule as presented in the 2013 and their current implementation status will be reviewed during this 2015 workshop. It is expected that any modifications or deviations from the original planning will be appropriately justified. The review of the NAcP to identify how the recommendation/suggestion provided by ENSREG are followed is not the objective of this 2015 NAcP workshop, because the main objective of the 2013 NAcP workshop was to present the national action plans and to peer review the contents and status of implementation of the NAcPs. In that case the peer review considered the extent to which the relevant post Fukushima assessment outcomes as well as ENSREG and CNS recommendations and suggestions have been taken into account. Nevertheless at the end of this NAcP workshop a preliminary report is expected to be released, including the main conclusions or outcomes which will be presented during the ENSREG nuclear safety conference and approved by the ENSREG Plenary.
3.	For which reactor and which measures did the regulator grant exemptions from the requirements with the argument of the reactor´s limited remaining operating lifetime?	It is well known that certain specific requirements are not applicable to reactors when a shutdown condition is achieved. If a permanent shutdown is achieved, some requirements valid for power operation are not longer needed. Consequently when a permanent shutdown condition is achieved, or it is planned to be, some requirement release can be granted after in a case

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		by case assessment. As it is mentioned in the previous paragraph the comparison with the NAcP schedule presented in the 2013 and their current implementation status will be reviewed during the workshop.
4.	In a letter of 20 Feb 2013 to the permanent representatives to the EU, the European Commission warned the member states that the implementation of the stress test action plans likely fall under the scope of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive). Which of the so far implemented stress test actions have been subject to an Environmental Impact Assessment?	According to the Directive 2011/92/EU, article 4.2, each Member States shall determine whether the project shall be made subject and shall make that determination through case-by-case examination. According this Directive an environmental impact assessment report is needed when a project is likely to have significant effects on the environment. If that is the case, the developer shall prepare and submit an environmental impact assessment report, and the competent authority, taking into account the information provided by the developer (including the site characteristics of the project, its location and its likely impact on the environment), shall issue an opinion on the scope and level of detail of the information to be included by the developer in the environmental and a decision to grant or refuse development consent, promptly inform the public and the authorities. With regard to provisions of this directive and national legal frameworks, Member States shall determine, for each project implemented according to stress test action plans, if it is under the scope of Directive 2011/92/EU Articles 4.1 or 4.2 and consequently should be subject to an environmental impact assessment. In the case of Spain for Nuclear Power Plants, an environmental impact assessment decision is required when the licensee applies for a site or a dismantling authorization. Insofar there has not been required an environmental impact assessment report to implement the stress tests actions or modifications needed to implement the NAcP.
#	**Specific questions from Greenpeace (focused on Almaraz NPP)**	---
1.	The CNS requires re-analysing the seismic hazard at each NPP site in Spain. As suggested by the ENSREG peer review team the analysis needs to consider geological and paleo-seismological data characterizing relevant active faults of the Iberian Peninsula. The CSN required the licensees to submit the new assessments by 2016 (S1) .	After implementing the improvements necessary to reach a seismic margin of 0.3 g in all the plants, which has been prioritized before performing new seismic hazard analysis, the time schedule to finalize the updating of the seismic hazard analysis is envisaged on three years since first half of 2015.

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	According to the updated NAcP, the issuing of a new ITC (foreseen in 2013) by the CSN is postponed to the first quarter of 2015. A new schedule for the seismic hazard assessment has not been announced yet. **Question 1: Which time schedule has been set to finalize the new seismic hazard assessment and complete the CSN review?**	
2.	The Spanish licensees have analysed possible secondary effects of earthquakes during the stress tests (31/12/2012). Significant improvements have been identified and scheduled for implementation by 31/12/2014 (A1and A2). One of the EC staff working document´s recommendations is not mentioned in the Spanish NAcP: "Within the framework of the on-going analyses on the effects of pipe rupture (non-seismic and seismic), it is suggested to consider in particular verifying that there are no common cause failure issues." According to the updated NAcP, the implementation of improvements (regarding internal flooding due to the circumferential rupturing of non Seismic Class piping, and water containers rupturing with major fluid releases) is completed. **Question 2: Which severity of an earthquake was assumed to assess the expected secondary earthquake effects? The EC staff working document recommended evaluating common cause failures – has this been undertaken?**	The considered severity for the analysis (seismic margins) was 0.3g as for the rest of the SSC seismically designed. In the case of piping not seismically designed initially, stress analyses were carried out to justify if they were able to withstand the 0.3g seism. In the cases of the piping that, according to this analysis, did not withstand the 0.3g seism, a circumferential rupture was considered in the effects analysis and if the consequences were not acceptable, design modifications were implemented in order to prevent those consequences (in general modifications in piping supports in order to assure that they would withstand the 0.3g seism). The objective of this analysis was to look for effects (mainly common cause failures originated by internal flooding caused by seism) which may have not been analyzed previously
3.	The site is located on the left bank of the Arrocampo brook reservoir; the Valdecañas dam is situated upstream (storage capacity 1146 hm3). The dam break analysis was re-assessed to check against the dam emergency plans and to resolve the identified inconsistencies. The analysis was completed by 31/12/2012 (A3). According to the updated NAcP, this activity is listed as completed despite the fact that "certain specific cases pending." It is mentioned that the revision and acceptance by the CSN of the analyses of dam rupture scenarios have undergone something of a delay due to the existing uncertainties, these having emerged during the review being performed by the CSN.	- The uncertainties have arisen on comparing dam break criteria applied in 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. - The licensee has provided a specific analysis to prove that the Valdecañas dam is able to withstand an earthquake greater than 0.3 g; the review by CSN will be finished in this year 2015.

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	Question 3: Please name the mentioned "existing uncertainties." When is the completion of the review due? Are some interim results available?	
4.	The necessary improvement of external flood protection of buildings containing safety related systems, structures and components (SSCs) was implemented in 2012(I2). According to the updated NAcP, this measure is completed. **Question 4: Does the external flooding protection include protection against a possible dam break scenario?**	The necessary improvements against external flooding include protection against possible dam break scenario. Beyond the analysis already performed by the licensees (showing the robustness of the dams against the postulated earthquakes) the CSN is considering requiring to the licensees, in some specific cases, additional analyses to verify the available margins against flood.
5.	Studies of the site accessibility in the event of extreme natural events (including possible proposals for improvement) were to be performed by (31/12/12, A6) According to the updated NAcP, the analyses have been completed and resulted in incorporating improvements at several plants. **Question 5: Has CSN completed reviewing this measure? If new results of the natural hazards assessment were found, would they be followed up with new studies?**	The CSN has completed the review of this issue. No new results of the natural hazards assessment have been so far identified which the potentiality to impact this aspect.
6.	Adopting a consistent approach for the return periods associated to heavy rain and extreme temperature scenarios at individual sites is planned in line with the ENSREG Peer Review team (S2) suggestion. In this context, the new WENRA Reference Levels for external events should have been implemented in the Spanish regulation in 2014. According to the updated NAcP, the implementation of the WENRA RL is pending. **Question 6: What time schedule is envisaged for the assessment of heavy rain scenarios (i.e. implementation of WENRA Reference Level into the Spanish regulation, review of the operator´s studies, and implementation of measures)?**	The new T issue, for external events was approved in July 2014. Spain is committed with the WENRA harmonization programme established. Auto-evaluation is currently in progress, and final implementation into the regulations is expected to be for 2017.
7.	The impact of potential combinations of natural external events credible at the site was to be identified by 31/12/12 (A4) According to the updated NAcP, the analyses of potential combinations of natural external events have been completed without significant aspects	These potential combinations are all regarding 'extreme weather conditions'. This is the case of wet snow precipitation coincident with strong wind, or strong wind with hail.

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	for the implementation of improvements having been identified. **Question 7: Please list the combinations of natural external events which were assumed to assess each individual NPP site´s ability to withstand.**	
8.	If the ultimate heat sink fails, the only possibility to cool the core is via the steam generators (SGs). This measure cannot be used in shut down operation modes. However, there are no plans to implement an alternate ultimate heat sink. **Question 8: Why does CSN not require an alternate heat sink?**	For PWR plants, after the EU Stress Tests different alternatives to feed the SG where implemented to remove residual heat. In case AC power is not recovered, an alternative to the use of the SG is the use of quick connection portable pumps to inject into the reactor core (in fully coordination with RCS depressurization strategies); it has already been implemented in Spanish NPP. This alternative path to inject to the RCS is able to take suction from different on-site water sources. For shutdown operating modes, with no possibility to use the SG, the same strategies to inject water from portable pumps is considered.
9.	New equipment (fixed or mobile) to cope with prolonged station black-out (SBO) was to be implemented (31/12/2014, I4). According to the updated NAcP, the implementation is completed. **Question 9: Which kind of new equipment (fixed or mobile) has been installed?**	The following equipment is now available at all the sites: - Diesel engineered portable pumps - Trucks to provide fuel to the portable pumps - Hoses and quick connections for the suctions of the pumps and for the delivery of the inventory to the different end points (RCS, containment, Spent Fuel Pool, other tanks, Fire-fighting devices and external building spraying to reduce the radiological release in case of leaks) - Mobile Electrical Diesel Generators - Portable lighting devices - Portable communication devices
10.	The feasibility of the manual actions required in a situation of total loss of electric supply (including batteries) was to be demonstrated. (31/12/2012, I5). According to the updated NAcP, this measure is completed despite the fact that "certain specific cases pending". **Question 10: Which manual actions are required in a situation of total loss of electric supply (including batteries)? Which "certain specific cases" are pending?**	The most important manual actions considered for an extended SBO are: - Load shedding to increase the life of critical batteries (in case DC is available) - Local-manual operation of Turbine Driven pumps - Local-manual operation of valves used in the emergency procedures and in the extensive damage mitigation guidelines (as, for instance, the steam generator relief valves) - Use of mobile equipment (pumps and electrical diesel generator)

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		All these manual actions have been validated by specific exercises. An analysis of the radiological protection of personnel performing manual-local critical recovery actions has been performed by the licensees (see I24). CSN evaluation is ongoing. This analysis is closely related to the feasibility of manual-local actions, so the issue cannot be closed until the evaluation is completed. Manual-local actions for Filtered Containment Venting System will be demonstrated when the system is implemented and the associated radiological calculations have been performed.
11.	Possible improvements to reinforce the existing capacities of de-pressurizing the primary system and avoid possible high pressure core damage sequences were to be analysed (30/06/2013, I16). According to the updated NAcP, the measure is completed. However evaluation by CSN is ongoing, further details are not mentioned)? **Questions 11: Are improvements to avoid possible high pressure core damage sequences considered necessary? Are improvements envisaged (if yes, in which time schedule; if not, why not)?**	For BWR (Cofrentes NPP): for the case of loss of the electrical and pneumatic systems to safety-relief valves, new alternative capacities have been implemented: electrical generating set and bottles with compressed air, for exclusive use of safety-relief valves. For PWR, in severe accident situations the depressurization of the RCS is envisaged via the depressurization of the secondary side of SG. This strategy has been reinforced by the use of turbine-driven auxiliary feedwater pump and relief valves, whose reliability has been increased after the Fukushima-I accident enhancements. Additionally, for PWR, the analyses performed by the licensees conclude that it is not necessary to implement new capability to open the Pressurizer relief valves for severe accident depressurization; furthermore, they conclude that this action may involve negative impacts (taking into account the possibility of not closing back the valves).
12.	Analysis of critical instrumentation required for accident management, and guarantee of its operability under SBO and severe accident conditions (31/12/12, I17). According to the updated NAcP, evaluation by CSN is ongoing. A number of difficulties has been encountered due to scarce international experience. **Question 12: What is the current status of the evaluation by CSN? When will the evaluation be finished? Is the implementation of new instrumentation considered necessary?**	As expected, no new instrumentation has been proposed by the operators to guarantee the operability under SBO; instead, modifications have been implemented in order to provide alternative means for reading the critical instruments in case of total extended AC/DC loss. The main conclusion of the CSN's evaluation for this issue (operability under SBO) is that this approach adopted by the licensees is appropriate. The analysis of the licensees of the survivability of critical instrumentation under severe accidents is not due to 2012 but to 31/12/2014 (it was a typing error in the NAcP). The expression "scarce international experience" is

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		related to this issue. Consequently, the CSN evaluation of this issue is ongoing.
13.	Containment integrity during severe accident is not assured yet: A dangerously weak point is the lack of a filtered containment venting system to prevent containment overpressure; implementation is planned until 31/12/2016(I14) According to the updated NAcP, implementation will be carried out during the 2016 and 2017 refuelling outages. **Question 13: Regarding the potential risks, why is the implementation of filtered venting not accelerated? Has it been considered to stop operation until the implementation of the filtered venting system will have been completed?**	Implementation of Filtered Containment Venting System (FCVS) has been required by CSN no later than 31/12/2016 for Trillo, Almaraz, Ascó, Vandellós 2 NPP (by Complementary Technical Instruction in March 2012), and before the start-up from the first refuelling which takes place after 31/12/2016 for Cofrentes NPP (by Complementary Technical Instruction in September 2013). This schedule was considered appropriate by CSN taking into account the nature of the design modification and all the modifications being implemented at the NPPs after the Fukushima accident. The CSN has not required stopping operation until the FCVS implementation, taking into account that FCVS is a mitigating system for severe accidents; therefore, it is not necessary for design basis accidents.
14.	No adequate measures to manage the large amount of hydrogen expected to accumulate in the case of a severe accident in the containment are installed yet; they are necessary to prevent explosions. The installation of passive autocatalytic re-combiners (PARs) should be finished by 31/12/2016. (I15). According to the updated NAcP, the work is on-going. **Question 14: Taking the potential risks into consideration, why is the implementation of PARs not being accelerated? Were considerations made to stop operation until the implementation of the PARs will have been completed?**	Implementation of Passive Autocatalytic Recombiners (PAR) has been required by CSN no later than 31/12/2016 for Almaraz, Ascó, Vandellós 2, Cofrentes NPP (by Complementary Technical Instruction in March 2012). This schedule was considered appropriate by CSN taking into account the nature of the plant modification and all the modifications being implemented at the NPPs after the Fukushima accident. The CSN has not required stopping operation until PAR implementation, taking into account that the PAR is a mitigating system for severe accidents; therefore, it is not necessary for design basis accidents.
15.	Potential hydrogen hazard in other buildings surrounding the containment should be analysed by 31/12/2013 (A7). According to the updated NAcP, the activity is completed. The licensees have carried out the studies requested. The CSN is currently evaluating these analyses. No information was provided on the completion of the evaluation or whether back-fitting will be necessary. **Question 15: Did the licensee suggest back-fitting measures? What is the result of CSN evaluation?**	In all the cases, the results of the calculations performed by the licensees show no unacceptable risks due to H2 concentrations in adjacent buildings. So, no additional measures have been proposed. In the calculations, in agreement with the regulator requirements, new systems for severe accidents that will be installed have been taken into account (notably: Passive Autocatalytic Recombiners and Filtered Containment Venting System). Evaluation of CSN is currently underway.

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16.	The possible consequences of containment flooding strategies for equipment (instrumentation) located inside containment were to be analysed by 31/12/2012 (A8) . According to the updated NAcP, the analyses have been completed and meant the incorporation of improvements at some plants. However, the evaluation by CSN is ongoing. **Question 16: What is the result of CSN's evaluation so far?**	The licensees' analyses scope included all the instrumentation in the containment used in the severe accident management guidelines. The result of the analyses is that, taking into account the water level expected in the containment due to flooding strategy, the instrumentation that will not be submerged will be sufficient to implement the strategies. The list of instruments in containment, and their elevation (identifying the expected elevation due to the flooding strategy), will be included as an aid in the corresponding Severe Accident Management Guideline (containment flooding). The main conclusion of the CSN's evaluation is that licensees' approaches and results are appropriate.
17.	Analysis of possible improvements to be implemented in relation to severe accidents that might develop from an initial shutdown situation were to be performed by 31/12/14 (A9). According to the updated NAcP, the analysis is on-going. It is stated that a number of difficulties have been encountered due to the scarcity of international experience (A9). The final implementation of Severe Accident Management Guidelines (SAMG) for accidents initiated during shutdown operation is scheduled for 2016. **Question 17: CSN has reviewed the improvement of severe accidents which result from initial shutdown situations – which results are already available?**	The analyses of the licensees are based on the PSA level 2 in shutdown and low power. In general, several enhancements have been proposed (some of them already proposed to cope with accident for power operation), such as: - New procedures for closure of the containment (in some cases, modifications to components) - Use of portable equipment - PAR and FCVS - Development of shutdown SAMG Evaluation of CSN is underway. 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.
18.	Analysis of additional SFP instrumentation measures, taking into account also the prolonged SBO situation was to be performed by 31/12/12 (I19). According to the updated NAcP, the measure is completed. No further details were provided.	New SFP temperature and full range level instrumentation, with appropriate qualification is being implement at the plants.

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	Question 18: Are additional SFP instrumentation measures already implemented or which time schedule is planned for this measure?	
19.	Integrate into the Spanish legal framework; the completion was scheduled for December 2013. According to the updated NAcP, publication is now foreseen during the first half of 2015 **Question 19: Why has the publication been postponed? Will the new deadline be met?**	First revision of the Instruction of CSN for Emergency Operating Procedures (EOP) and Severe Accident Management (SAM) was prepared in February 2011. After the Fukushima accident, CSN decide to delay the publication of the Instruction. Once WENRA has edited the revised Reference Levels (RLs) the CSN has finally decided to issue the new Instruction (IS-36) dated on January 15th 2015.
20.	Possible improvements of electrical feeds to control room habitability systems for situations of prolonged SBO was to be analysed by 31/06/12. (I20). According to the updated NAcP, the analyses have been completed and meant the incorporation of improvements at all the plants. **Question 20: Has CSN already finished reviewing the analysis? Are all required improvements implemented already? Why is the implementation of an ECR not required by CSN?**	- The CSN's reviews have been already finished. - Yes, they are fully already implemented in the plants: the Spanish utilities have decided to add a new capacity to incorporate the capacity of feeding this system with new mobile diesel generators (one has implemented a new dedicated electric generator to cope with this function). - The CSN has considered this option (ECR) as not necessary taking into account the new capabilities (fixed and mobiles equipments) incorporated in all the plants.
21.	Analysis of the suitability of the human resources currently assigned to the ORE (Emergency Response Organisation). Implementation of improvements deriving from the analysis were to be performed by 31/12/13 (I7) According to updated NAcP, CSN´s assessment is on-going. It also mentioned that within the framework of the review of the plant plans in order to define the composition of the plant Emergency Response Organisations, CSN is addressing the verification of the time margins for the control or mitigation of severe accidents. The ENSREG peer review team recommended verifying the assumptions on which these margins are based on. Thus CSN is performing a detailed review of the analyses submitted by the licensees on September 15th 2012 in relation to their Emergency Response Organisations, in which they were required to explain the time available for each manual action, including the margin with respect to the appearance of cliff-edge situations.	- The analyses presented in 2012 by the licensees were judged as not-sufficient by the CSN, except in the particular case of one of the plants. This conclusion was timely transmitted to the licensees, who responded in 2014. In all the cases reinforcements to the human Emergency Response Organization (ORE) have been proposed. - The CSN evaluation is almost finished, concluding that the time margins after the ORE improvements are adequate.

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	Questions 21: The licensees submitted results of Emergency Response Organisation analyses on September 15th 2012 - what did the results show? Does the CSN consider the time margins for undertaking manual actions during severe accidents sufficient?	
#	**Generic questions from Mr. Wolfgang Renneberg**	**---**
1.	I ask the European Nuclear Regulators whether they are precisely informed on the analyzed safety deltas on system- and component level following the stress test, whether the safety criteria that are/were used to define the deltas are explicitly defined and approved and correspond to the state of the art - and if not, why?	The issue of "safety deltas", although being quite interesting, was not explicitly included in the European Stress Test scope; consequently, it has not been quantified. However, the CSN has continuously considered in all this process the adequate comparisons with the approaches adopted in different European and non-European countries.
2.	I ask the European Nuclear Regulators whether they are willing to make a list available of the identified shortcomings/risks, the affected systems and components, the used safety criteria to define the risks, the component- and system-specific measures taken, and the degree up to which the shortcomings have been eliminated by their measures - and if not, why?	These issues, although being quite interesting, were not explicitly included in the European Stress Test scope; consequently, they has not been analyzed. However, the CSN has continuously considered in all this process the adequate comparisons with the approaches adopted in different European and non-European countries.