POST-FUKUSHIMA
EUROPEAN ACTION PLAN

SPAIN
NATIONAL ACTION PLAN

December 19th, 2012

TABLE OF CONTENTS

❖ 1.- INTRODUCTION

European Stress Tests

In the wake of the accident that occurred on March 11th 2011 at the Fukushima Daiichi Nuclear Power Plant (NPP) in Japan, all the European countries initiated actions aimed at verifying the safety measures in place at their plants; however, the advisability of developing a coordinated response within the European Union (EU) very quickly emerged, in order to ensure that all the nuclear power plants in these countries were sufficiently robust to address situations similar to those that occurred at the aforementioned plant.

During its meeting of June 10th 2011, the European Council agreed on a plan to subject all European nuclear power plants (NPPs) to a homogeneous set of "Stress Tests", these being clearly defined in a document previously drafted by WENRA and ENSREG. The objective of these tests was to make it possible to assess the capacity of the NPPs to withstand situations beyond their respective design bases and to identify the safety margins existing with respect to these bases and the potential measures that might be implemented to improve their safety. As agreed, the plan was fully completed in all the countries by December 31st 2011.

Just after the completion of this task, an associated Peer Review process was started, which included four successive phases: desk-top review, topical review (held in Luxemburg in February 2011), country reviews (fulfilled in March and April) and, finally, an additional "country fact finding review", carried out in September 2011, the objective of which was to check the consistency of the actions already initiated by the different countries. In the last two phases the review teams visited all the participating countries and a total of 24 NPPs, including all the different designs currently existing in Europe.

Ongoing European Action Plan

The ENSREG Action Plan [1], issued last July after the completion of the Stress Tests, considered that a new step forward should be taken in order to verify the global consistency of the implementation of the recommendations drawn from the Stress Tests. For this task, all the countries have agreed to prepare a National Action Plan (NAcP) by December 31st 2012, in which each national regulator should:

- Consider the results of the national Stress Tests
- Take into account the suggestions and recommendations of the ENSREG peer reviews
- Include the recommendations compiled by the Peer Review Board
- Take account of the relevant outputs from the Extraordinary meeting of the Convention on Nuclear Safety (hereinafter the CNS-EOM)
- Other actions resulting from other national reviews
- Make public the NAcP

In the aforementioned ENSREG plan it is established that the national plans will be peer reviewed in a process that will start immediately after their issuance; this process should include, at least, the items related to the conclusions of the Stress Tests and the previous reviews.

2.- OVERVIEW OF THE SPANISH NATIONAL ACTION PLAN (NAcP)

The Spanish NAcP contains a comprehensive compilation of the actions currently on-going in Spain related to the post-Fukushima programs, which have been initiated both at national and international level. The plan has been prepared following thorough discussion by the Spanish Nuclear Safety Council Technical Staff and sent to the members of the Council Plenary. The Council has reviewed the content of the document and has approved it during its plenary meeting on 19th December 2012.

According to the ENSREG recommendations the plan includes the following:

- The conclusions drawn from the Stress Tests process implemented between June and December 2011; these conclusions were detailed in the National Report issued by the CSN on December 21st of that year [3]. Furthermore, on March 15th 2012 the CSN issued to all the licensees a set of binding Complementary Technical Instructions (hereinafter ITC-STs) requesting the implementation of all the conclusions drawn throughout the process in accordance with a predefined schedule.

- The suggestions and recommendations of the ENSREG peer reviews that were carried out in March and in September 2012; these recommendations were detailed in the corresponding review reports.

- The general recommendations compiled at European level by the Peer Review Board in the report "Compilation of recommendations and suggestions from the peer review of stress tests performed on European nuclear power plants" [2] dated 26th July 2012.

- The relevant outputs from the Second Extraordinary Review meeting of the CNS-EOM [4], [5]

- Other actions already initiated in Spain at national level

Also in accordance with the ENSREG guidance, this document is aligned to the 6 topics identified in the August 2012 CNS-EOM, and organized in the following four parts:

- Part I, Stress Tests topics 1 to 3. This section addresses national conclusions and generic activities related to each item of the ENSREG document of reference 2.
  - Topic 1: external events
  - Topic 2: design issues (mainly related to the loss of electrical power or heat sinks)
  - Topic 3: severe accident management and recovery (on-site),

- Part II, topics 4 to 6. This addresses national conclusions and generic activities related to each additional issue identified by the CNS-EOM, including:
  - Topic 4: national organizations
  - Topic 5: emergency preparedness and response and post-accident management (off-site)
  - Topic 6: international cooperation.

- Part III, additional topics. This addresses conclusions and generic activities derived from national reviews and related decisions.

- Part IV, implementation of Activities. This part identifies timelines and key milestones of each improvement activity at both generic and plant (site) specific level.

3.- CONTENT OF THE SPANISH NATIONAL ACTION PLAN

This section contains detailed information about the on-going and the anticipated actions to be implemented in Spain as part of the Action Plan committed at European level, and the corresponding implementation process.

3.1 Part I, Stress Tests topics 1 to 3

The planned actions related to this topic are detailed as follows:

a) Requirements already issued by the CSN (conclusions of the Stress Tests in Spain)

With the objective of incorporating all the conclusions of the Stress Test process in the Spanish plants, on March 15th 2012 the CSN issued a binding Complementary Technical Instruction (ITC-STs) to each of the licensees. These ITCs include all the relevant conclusions stemming from the Stress Test process carried out in Spain from June to December 31st 2011, and must be implemented in a timeframe extending up to December 2016. The ITCs included all the licensees' proposals and also some additional improvements deemed appropriate by the CSN. Additionally, some "requests for information" have been included in the instructions in order to require the licensees to complete their analysis or to carry out additional studies; after the completion of these analyses the CSN will decide on the appropriateness of establishing further requirements.

Attachment 1 summarizes the content of these CSN instructions in two tables, one for generic actions and the other for additional plant-specific actions.

b) Recommendations and suggestions from the ENSREG Peer Reviews carried out in Spain

The ENSREG Review Team visited Spain twice: first in March 2012, when the complete Team attended the mission and included a visit to Almaraz NPP (2-group Westinghouse 3-loop plant), and subsequently in September, when a reduced Team completed the anticipated "fact finding review"; on this occasion the Team visited Trillo NPP (single unit KWU 3-loop plant).

Attachment 2 contains a table with the recommendations emanating from both visits and the actions foreseen by the CSN to respond to them.

c) Relevant ENSREG recommendations and suggestions

Attachment 3 contains a table with cross-referenced information on the consideration given in Spain to the aspects included in the ENSREG document [2], where their generic recommendations and suggestions arising from the peer review process have been compiled.

d) CNS-EM recommendations and suggestions

Attachment 4 contains a table with detailed information on the consideration given in Spain to the aspects included in the two reports issued following completion of the Second Extraordinary Review Meeting of CNS-EOM:

- The commitments contained in the Annex to the meeting's Final Summary Report [4]

- The different issues presented by the *rapporteurs* of topics 1 to 3 during the meeting sessions that were subsequently collected in the President's Report [5].

3.2 Part II, topics 4 to 6

3.2.1 Topic 4: national organizations

a) Current situation in Spain

In Spain, regulatory functions relating to nuclear safety and radiological protection are carried out by different authorities: the Government, which is in charge of energy policy and of issuing binding regulatory standards, the Ministry of Industry, Energy and Tourism and the Nuclear Safety Council, the body solely responsible for nuclear safety and radiological protection

✓ Ministry of Industry, Energy and Tourism (MINETUR)

The MINETUR has assigned to it the following functions in relation to nuclear and radioactive activities:

- Issuing of permits for nuclear and radioactive facilities (except for second and third category radioactive facilities located in Autonomous Communities to which administrative functions have been transferred in this area), following a mandatory and binding report by the CSN.
- Drawing up of standards proposals and enforcement of the system of sanctions.
- Contribution to definition of the research, technological and development policy in this area, in collaboration with the Ministry of Economy and Competitiveness.
- Monitoring of compliance with the international commitments subscribed by Spain in the field of nuclear energy, in particular in relation to non-proliferation, the physical protection of nuclear materials and facilities and civil liability for nuclear damage.
- Relations with International Organizations specializing in this field.
- Relations between the Government and the CSN.

✓ Nuclear Safety Council (CSN)

Functions: the main functions of the CSN are as follows:

- To make proposals to the Government regarding necessary regulations in its realm of competence, and to draw up and approve technical instructions, guidelines and circulars.
- To issue the corresponding reports to the MINETUR for the latter to take decisions regarding the granting of the legally established authorizations. These reports are binding when negative and denying such authorization, and also as regards the conditions established when positive.
- To undertake the control and inspection of all the facilities and during all phases, especially during design, construction, start-up and operation and in the transport, manufacturing and homologation of equipment incorporating radioactive sources or generating ionizing radiations. The CSN is authorized to suspend the operations of these facilities for safety reasons.
- To collaborate with the competent authorities in the setting out of the criteria to be fulfilled by the off-site emergency plans, and coordinate the support and emergency response measures.
- To collaborate with the competent authorities in setting out the criteria to be fulfilled by the physical protection plans of nuclear and radioactive facilities.
- To propose the initiation of sanctions proceedings in the event of infringements relating to nuclear safety and radiological protection.

- To control measures for the radiological protection of professionally exposed workers, the public and the environment.
- To collaborate with the competent authorities in relation to programs for the radiological protection of persons subjected to medical diagnosis or treatment using ionizing radiations.
- To issue favorable reports on new designs, methodologies, simulation models or verification protocols relating to nuclear safety and radiological protection.
- To grant and renew nuclear and radioactive facility operator and supervisor licenses, head of radiological protection service diplomas and accreditations in the field of radio-diagnosis.
- To carry out studies, assessments and inspections of plans, programs and projects for all phases of radioactive waste management.

Independence: Law 15/1980 establishes mechanisms to guarantee the independence of the CSN, one of them being the procedure whereby the members of the Plenary (President and Counselors) are appointed; these are required to be persons of recognized solvency in the areas commissioned to the CSN and special value is attached to their independence and the objectiveness of their criteria. They are appointed by the Government in response to proposals by the MINETUR and following the appearance of the candidates before the corresponding Congressional Commission. Their term of office is six years and they may be re-elected once only for a second term. The posts of President and Counselor and other high-ranking positions are incompatible with any other post or function; the persons occupying such posts shall not carry out professional activities relating to nuclear safety and radiological protection during the two years subsequent to their leaving the position.

The CSN does not systematically make use of external technical support from other organizations. Only for some very specific tasks, the CSN's technical know-how is complemented by public organizations, engineering firms or private consultants.

Funding: the CSN's budget is integrated into the General State Budget, as a result of which its approval corresponds to Parliament. The revenues are obtained fundamentally through the collection of fees and public prices for the services it renders in fulfilling its functions, the conditions for this being regulated in Law 14/1999, of May 4th, on Fees and Public Prices for services rendered by the CSN.

Assessments: in addition to internal assessment, the CSN has been subjected to external evaluations by national and international organizations. As regards the latter, in early 2008 the CSN hosted an IAEA's IRRS mission that identified good practices and issued suggestions and recommendations, this requiring important preparatory self-assessment, systematization and review efforts by the Council. Furthermore, in January 2011 a follow-up IRRS mission was carried out in order to check the degree of implementation of the recommendations contained in the 2008 mission, this being in response to a request by the Spanish Government. This mission concluded that the CSN had significantly improved its regulatory activities overall and pointed out a series of good practices. The final reports resulting from these two missions are public and available on the CSN website.

Transparency: the transparency policy of the CSN is defined by the law by which the body was created, Law 15/1980, of April 22nd, reformed by Law 33/2007, of November 7th. This legislative reform incorporated guaranteed access to information on the environment, the participation of the public in decision-making and access to justice regarding environmental matters, as contemplated in the Aarhus Convention, which was ratified by Spain in 2004 and materialized in the national legislation by way of Law 27/2006, of July 18th, regulating rights to access to information, public participation and access to justice in relation to environmental matters. The amendment of the Law Creating the CSN was particularly ambitious regarding public information, aiming clearly to increase the transparency of the organization and promote public trust on its activities.

The obligations as regards information and communication are channeled along three paths:

- Policy regarding information to the State Institutions: every year the CSN submits a detailed report to the National and Regional Parliaments on the activities carried out during the year.
- Policy regarding information in the vicinity of nuclear facilities: the legislation obliges the CSN to promote and participate in information forums in the vicinity of these installations.
- Policy regarding information for the general public: Law 15/1980 establishes the need to provide access to information and facilitate the participation of the members of the public and civil society. The CSN provides web-based information on the minutes of Council meetings, the technical reports supporting the agreements reached by the Council, the inspection reports, information on the integrated plant supervision system (SISC) and all relevant events relating to the operation of the nuclear and radioactive facilities. As regards information for the media and stakeholder groups, the CSN responds to direct requests applying criteria of transparency and agility as dictated by technical rigor. Furthermore, the CSN is obliged to subject its instructions and safety guides to public feedback during the preparation phase, and makes a form available to the workers of nuclear and radioactive facilities in order for them to report on any event affecting the safety of these installations, with guaranteed confidentiality.

Advisory Committee: the CSN Advisory Committee for Information and Public Participation in relation to nuclear safety and radiological protection was set up in compliance with article 15 of Law 15/1980, specifically in accordance with the wording of reform Law 33/2007, with the mission of issuing recommendations to the CSN to promote and improve transparency, access to information and public participation in areas included with the Council's realm of competence. This legal provision was enacted in 2010 through the approval of the new CSN Statute, by Royal Decree 1440/2010, with establishment of the rules applicable to its working. The legal basis having been established, the appointment of the members representing the entities and organizations contemplated by law took place at the end of 2010.

b) Aspects considered in the President's Report (CNS-PR) of the Second Extraordinary review meeting of the CNS-EM [5]

❖ Review and revision of nuclear Laws, Regulations and Guides

According to the information included in previous paragraph a), no deficiencies have been identified in the Spanish Nuclear Laws with respect to the accident that occurred at Fukushima. Nevertheless, the CSN has been carrying out an extensive program for the last four years to adapt the regulation to the WENRA harmonization process (development of new CSN "Instructions", which are legally binding): both the WENRA process and the CSN adaptation program are carefully taking into account the lessons learnt from the accident. For example, it is worth mentioning that the CSN Instruction on Accident Management, previously scheduled to be issued by the first semester of 2011, was intentionally delayed to 2013 in order to reflect the most important actions associated with the Fukushima event.

❖ Changes to functions and responsibilities of the regulatory body – strengthened independence

According to the information included in the previous paragraph 3.2.1.a), no changes are deemed necessary in Spain in relation to the issue of the independence of the regulatory body.

❖ Post-Fukushima safety reassessment and action plans

The Stress Tests carried out in Europe constitute a comprehensive post-Fukushima safety reassessment of the Spanish plants.

- Human and organizational aspects

According to article 5.3 of the EURATOM Directive on Nuclear Safety, the CSN is provided with the appropriate authority and financial resources to properly fulfill its duties.

3.2.2 Topic 5: emergency preparedness & response and post-accident management (off-site)

Very soon after the occurrence of the Fukushima accident, the need to review the provisions to cope with major nuclear accidents became clear for most of the agencies involved in the Spanish Emergency System. An action plan was drafted in close cooperation between the two main actors in this system, the Directorate General for Civil Defense and Emergencies and the nuclear regulatory authority, the Nuclear Safety Council.

The main aspects of such a plan were summarized in the Spanish National Report to the second extraordinary meeting of the Convention on Nuclear Safety. The plan included the in-depth, open review of the provisions set forth in the document which establishes the main provisions and criteria for Preparedness, Planning and Response to nuclear emergencies, the so called PLABEN (Basic Plan for Nuclear Emergencies). Eleven general issues were identified to be the main points, on which the review work will be focused:

1. Adequacy and provision of adequate resources to cope with major nuclear emergencies and other organizational issues:

   In this area, the inclusion in the emergency organization of all the resources provided by the Military Emergency Response Unit (a military unit created and specially trained and fitted to cope with major disasters, which was created in 2005) is one of the main aspects to be considered.

2. Reference levels for protective actions, both for urgent and intermediate phase:

   The reference levels included in the PLABEN currently in force will be reviewed and updated to the most recent international criteria (i.e., IAEA BSS) and other lessons drafted from the Fukushima accident, especially the ones relating to management of the intermediate phase.

3. Reference levels for emergency response personnel:

   The reference levels for off-site and on-site intervening personnel will be harmonized; in the current PLABEN the approach is not consistent with this principle. Moreover, the reference levels to be adopted should allow sufficient margin to permit the assigned personnel to carry out on-site activities that are deemed to be crucial to prevent or mitigate major releases.

4. Accident scenarios and their time scale:

   Suitable changes should be considered in the resource allocation and provision to cope with long-lasting emergencies, considering the possibility of the need for urgent response actions planning and preparedness level. Also, the coordination of off-site provisions with some relevant on-site actions involving the possibility of important releases (specially the opening of the containment venting) will be addressed.

5. Emergency Planning Zone (EPZ) size:

   The current provisions for the EPZ considered in the PLABEN include an Urgent Protective actions Zone (Zone 1) measuring 10 km. in radius and a Long Term Protective actions Zone (zone 2) with a radius of 30 Km. It is necessary to reassess the size of such zones, considering the experience of Fukushima, to determine the suitability of possible modifications, to allow for more realistic planning and preparedness. The size of the Preferred Actuation Zone (currently 5 Km.) will also be included in the reassessment.

6. Decision making and implementation criteria for urgent and intermediate phase protective action:

   The implementation criteria for some urgent phase actions will be reviewed, taking into consideration some insights from the Fukushima experience and new trends in emergency management:

   - In the case of evacuation, the suitability of implementing a staggered evacuation criterion should be considered. This would involve a departure from the current PLABEN criterion (which establishes evacuation in the direction of the wind, the so called preferred attention sector) to an evacuation zone based on distance and staging the evacuation according to prioritizing criteria.

   - To limit the duration of on-site sheltering to a few days

   - To analyze several options (i.e. centralized distribution vs. distribution in advance) to improve the effectiveness of radiological prophylaxis.

   In the case of relevant long term protective actions (relocation, foodstuff and water control), it is considered that the applicable criteria must be reviewed and developed in further detail, considering the lessons learned from Fukushima and the most recent developments in these areas.

7. Warning and communication systems:

   The existing warning system in Zone 1 should be reviewed to provide a balanced set of diverse and effective means to alert the population, considered some limiting scenarios. Also, the provisions to communicate to the public and the media during the emergency will be revisited to foster the ability of providing both reliable and timely information.

8. Public radiological screening facilities:

   The current PLABEN establishes the provision of facilities (the so called Screening and Decontamination Facilities, ECD) where the evacuated people are directed after evacuation and, once this screening and decontamination is completed, then the public is directed to the Sheltering and Lodging Centers. The site of these ECD's is not very far from the NPP (consequently, they may be contaminated during a large accident) and the size of the facilities is relatively small, so the ability to screen a large number of people is limited. Thus, in the light of the experience of Fukushima this issue is going to be reassessed and the suitability of modifying the screening process determined, so that it may be carried out directly in the Sheltering and Lodging Centers.

9. Strengthening the role of the municipalities during planning and response:

In order to boost this role, which has been shown to be essential, suitable changes in the organizational provisions of the PLABEN will be defined.

10. Cooperation of the licensees with the off-site emergency plans:

    To date, the cooperation of the licensees with the off-site emergency plans takes place in an unstructured manner and only on a voluntary basis. This situation must be changed to allow for the binding and clearly structured cooperation of the licensees with the off-site emergency plans, both in preparedness, planning and response.

11. Transition from urgent to intermediate phase and from intermediate emergency phase to the existing exposure situation:

    The current PLABEN is mainly focused on the urgent phase. Very few provisions are included for the intermediate phase. Moreover, the concept of the existing exposure situation is not included, due to the issuance date of the document. More detailed and clear provisions (both from the technical and organizational standpoint) will be included for the intermediate phase. Also, the concept and provisions for transition to the existing exposure situation, as set forth in the IAEA BSS (Basic Safety Standards), will be established.

Additionally the Nuclear Safety Council (CSN, the regulatory authority, which is responsible during nuclear emergencies for the coordination of support and response activities relating to nuclear safety and radiological protection) is considering two additional aspects for improvement:

12. Improvements in environmental radiological surveillance during an emergency, including new capabilities for both mobile monitoring units and the fixed surveillance network.

13. Improvements in the Virtual Private Network (VPN) which supports the communications between the different emergency response centers (off-site, on-site, CSN) and consideration of alternate means for communication should this VPN became unavailable during an emergency.

The aforementioned plan covers the entire scope, as regards the off-site emergency topic, referred to in the Report [5] of the President of the Extraordinary Meeting of the Nuclear Safety Convention, held in Vienna last August. Considering these points, the correspondence between the thirteen points set out above and the issues highlighted in the Report of the President is as follows:

- Update to emergency plans: see items 1 to 11 above

- Planning and off-site exercises: see items 1 to 11 above and also the chapter 3.1 of this report which addresses on-site emergency management aspects

- Enhancements in radiation monitoring and communication capabilities: see items 7, 12 and 13 above, and also the chapter 3.1 of this report.

- Recovery Phase Aspects: see items 1, 6 and 11 above

- Adequacy of Emergency Response "Headquarters" and Sheltering Centers: See items 8 and 12 above

The working plan to draft the new PLABEN aims to have the new plan approved in 2013, following which the revision of the different provincial emergency plans will be started.

Regarding items 12 and 13, the CSN is now in the process of drafting a working plan, the aim being to complete the activities to define the necessary changes and improvements between 2013 and 2014.

3.2.3 Topic 6: international cooperation

Although nuclear safety is a national responsibility, the Fukushima accident revealed the international dimension of any accident affecting a nuclear facility.

The international cooperation was a topic discussed during the second extraordinary review meeting of the Convention on Nuclear Safety (CNS). The main International activities carried out by the CSN were identified in the Spanish national report for this meeting.

a) Aspects considered in the President's Report CSN-PR of the CNS-EM

- Use of Peer Reviews

As has already been mentioned in point 3.2.1.a), Spain hosted a full-scope Integrated Regulatory Review Service (IRRS) mission between January 28th and February 8th 2008.

The results of the mission produced a total 7 recommendations and 26 suggestions and identified 19 good practices. The recommendations and suggestions made by the IRRS mission led the CSN to review its Action Plan in order to adopt the mission's results. Subsequently, from January 24th to February 1st 2011, the CSN hosted an IRRS follow-up mission.

The results of the IRRS mission and IRRS follow up mission have been published by the CSN on its website and are available to the public and stakeholders. Furthermore, the Spanish national reports for the CNS have included how these peer reviews and mission findings have been addressed.

The CSN provides support for IRRS missions to other countries through the participation of experts on the review teams, when requested by the IAEA. The level of the experts provided by Spain shows the strong commitment to these review activities.

The CSN strategy regarding peer reviews covers the remarks included in point 19 of the Report of the President of the Second Extraordinary Review Meeting of the CNS, which fosters the use of the peer review process. All the processes and action plans carried out by the CSN to ensure implementation of the findings of the peer review and missions, and also the results of Spanish IRRS missions, have been reported at CNS review meetings.

Within the framework of the European Union framework, Spain has also hosted two peer review missions in relating to the framework of European Stress Tests, which are described in depth in the point 3.2.1. a).
The outcomes of any future peer reviews shall be reported to the Member States and to the European Commission, and in the Council's national reports to the CNS.

In addition, the CSN promotes and supports international revision activities in the side of the NPP's licensees, which are within the framework of organizations as WANO ("Peer Reviews") or the IAEA (missions OSART).

Complementarily to the specific aspects related to the Peer Reviews, the CSN also fulfills other exercises of "benchmarking" type with regulatory bodies of other countries; for example, recently two exercises of this type have been carried out with the US-NRC focusing on the NPPs' inspection and evaluation processes. Finally, and in a quite different field, Spain assumes the fulfillment of article 9 of the Euratom 2009/71 Directive, which establishes that the States Members must carry out, at least once every ten years, a periodic auto-evaluation of its national regulatory frame and competent regulatory authorities.

- ❖ Optimization of the global safety regime

It was reported in the Spanish national report for the second extraordinary meeting of the CNS, the CSN collaborates with other Spanish authorities (MAEC and MINETUR) in international relations within its realm of competence, i.e., nuclear safety, radiological protection and the security of nuclear facilities.

In the multinational area, the CSN participates actively in the nuclear safety activities of the IAEA, the NEA and the European Union. This includes representatives on committees and working groups to develop international safety standards and guidance, and participation in international peer review missions.

b) International action at European Level:

As a result of the Fukushima accident, WENRA decided to set up several working groups, among them one on mutual assistance. This group should put in place arrangements for mutual assistance amongst regulatory bodies in responding to nuclear accidents in one of its members' states.

As a result of the Fukushima accident, WENRA decided to set up several working groups, among them one on mutual assistance. This group should put in place arrangements for mutual assistance amongst regulatory bodies in responding to nuclear accidents in one of its member states.

Furthermore, on August 1st 2012 ENSREG approved an action plan that also refers to off-site emergency preparedness. ENSREG asked HERCA and WERNRA to jointly develop improved guidance on mutual assistance between regulators.

The CSN has been actively involved in the activities of WENRA and HERCA. However, considering the ENSREG mandate, the CSN is participating in the new joint WENRA-HERCA working group, which is an effort to reduce and avoid duplications.

The CSN is also participating in other working groups implementing the lessons learned from the Fukushima accident within the framework of WENRA: natural hazards, containment response in severe accidents, accident management and the impact of post-Fukushima analyses on periodic safety reviews (PSRs).

Finally, the CSN will be collaborating within the framework of ENSREG in the drafting or review of the new proposal amending the Directive 2009/71/Euratom, in order to include new technical safety requirements, improve nuclear safety governance and improve transparency.

c) International action on the multilateral plane (outside of the European Union):

The CSN has participated within the framework of the Latin American Forum of Radiological and Nuclear Regulators (FORO) in a project aimed at reviewing the safety of NPP's in Latin America, similar to the European stress tests. The countries involved in analyzing the stress tests program were Argentina, Brazil, Mexico and Spain, and the evaluation of the results obtained was carried out by all the FORO member countries.

The CSN took part in the Ministerial-level Conference which took place in June 2011, one of the most important initiatives launched by the IAEA in the wake of the Fukushima event. This conference served to develop the bases of the IAEA action plan, which was approved by the meeting of the Council of Governors in September 2011. The recommendations given in this plan include the reinforcing of the IAEA's main activities to maintain a high level of nuclear safety in the world (establishing safety standards, the use of peer-review structures such as the IRRS's and OSART's, revision of the international Conventions relating to nuclear safety, accident notification and assistance to countries suffering an accident, etc.), activities to which the CSN has contributed extensively for many years.

The CSN will participate in the forthcoming Fukushima Ministerial Conference on Nuclear Safety, organized by the IAEA and the Government of Japan, December 2012, in Fukushima, Japan.

❖ Strengthening communication mechanisms through regional and bilateral cooperation

The CSN attaches great importance to bilateral relations with other regulatory bodies. It has numerous technical cooperation agreements having as their main objective the establishment of a basis for collaboration and the exchange of information. Since the Fukushima accident, the CSN and its regulatory counterparts reinforced the exchange of information within the framework of the bilateral agreements. Spain has shared national activities and approaches with other regulatory bodies in the wake of Fukushima, both bilaterally (China, France, Russia, the United States) and multilaterally (FORO, INRA, WENRA and HERCA).

The CSN has always been deeply involved in enhancing communications with the stakeholders. In this respect, in May 2012 the CSN organized an International Workshop on Crisis Communication: Facing the Challenges, in collaboration with the NEA, the main objective being to bring together senior-level regulators and communicators from nuclear regulatory organizations in order to share best practices and to improve crisis communications based on lessons learnt after the Fukushima accident.

Furthermore, in June 2012 the IAEA organized the International Experts' Meeting on Enhancing Transparency and Communication Effectiveness in the event of a Nuclear or Radiological Emergency. The CSN participated in the Working Session dedicated to challenges in Communication during the Fukushima Nuclear Emergency to present the Spanish practices.

At the extraordinary review meeting of the CNS, the need for the Contracting Parties to cooperate with neighboring and regional countries and to assist in the establishment of nuclear and regulatory infrastructure was highlighted. In this respect, the CSN is giving priority to enhancing bilateral relations with Portugal and Morocco, promoting the signing of a specific agreement for collaboration and mutual cooperation.

At regional level, Spain is working with the Latin American Forum of Radiological and Nuclear Regulatory Bodies (FORO) on a new project aimed at harmonizing and updating the working

methodologies for preparedness for and response to nuclear and radiological emergencies, including communication mechanisms.

The CSN is assisting in the establishment of nuclear and regulatory infrastructures within the framework of the Instrument for Nuclear Safety cooperation (INSC) of the EC, which seeks for greater convergence of international regulatory frameworks. Currently, it is involved in the projects to strengthen the regulatory bodies of Brazil and Morocco.

❖ Effectiveness of experience feedback mechanisms

The CSN is committed to the systematic evaluation of domestic and international operating experience. The CSN participates in the Working Group on Operating Experience (WGOE) of the NEA, in the INES and the IAEA's International Reporting System for Operating Experience (IRS), and as an observer in the European project on operating experience feedback.

In 2012 the CSN set up an International Incidents Review Panel (PRIN), the function of which is to systematically review the different documents on international operating experience to be dealt with and assess the need for the Spanish nuclear power plants to take actions in this respect. This panel of experts meets quarterly.

The CSN is complying with the main statements identified in the discussions of topic 6 of the second extraordinary review meeting of the CNS.

❖ Strengthening and expanded use of IAEA Safety Standards

As was agreed by the Contracting Parties during the extraordinary review meeting of the CNS, the CSN recognizes that IAEA Safety Standards may be used in conjunction with the adoption of best practices and the fulfillment of the legally binding European Community framework as a tool to continuously improve nuclear safety.

The CSN also welcomes the revision of IAEA Safety Standards in the light of the Fukushima event and stresses the need for these Standards to be reviewed continuously, recognizing the importance of the strengthening and expanded use of the IAEA Safety Standards.

The IAEA IRRS review program has a role to play because the peer reviews are concentrated on key areas of regulatory activity identified within IAEA safety standards to assess the effectiveness of the regulatory body and the use of these standards in the development of national nuclear safety regulations.

The CSN has fostered the use of the IAEA Safety Standards, as is demonstrated through the major effort made in financing the translation of these Standards into Spanish, in order to facilitate the understanding and use of these documents in all Spanish-speaking countries.

Finally, it is worth pointing out that the WENRA harmonization efforts have implied the incorporation of most of the relevant IAEA requirements into the Spanish national regulations and standards.

3.3 Part III, additional topics

❖ Complementary Technical Instruction related with the potential loss of big areas of a NPP

In addition to all the topics and actions covered by the Stress Tests and the ENSREG Peer Reviews, and in a separate but totally coordinated process, the CSN has initiated a program aimed at protecting the plants against other severe events that might be produced by mankind and seriously impacting the safety of the installation, the environment and public health.

It is important to point out that the actions being requested by the CSN are focused on the "mitigation" of the consequences of these extreme situations.

On July 1st 2011, the CSN issued a first set of ITCs, requesting the preparation, before the end of 2011, of the plant-specific analysis to make the installation ready to cope with these situations, including the proposals for new material and/or human resources. The ITCs required that consideration be given to the three main aspects of the problem within the scope of the analysis:

- The capacity to fight major fires beyond the plant design basis

- The capacity to mitigate potential fuel damage (both in the reactor core and in the spent fuel storage facilities)

- Ways to limit or control the radioactive emissions, in the form of liquid or gas releases

On July 27th 2012, the CSN issued new ITCs incorporating some clarifications regarding the process, including the need to draw up an implementation plan fully consistent with the one already prepared for the incorporation of the conclusions of the Stress Tests.

3.4 Part IV, implementation of Activities:

The complementary instructions issued by the CSN (ITC-STs) following the Stress Tests considered a schedule for implementation divided into 3 periods: short, medium and long-term, which correspond to the periods ending in the years 2012, 2014 and 2016. The dates are essentially the same for all the plants, with minor differences when referred to plant-specific modifications. The tables in attachment 1 explicitly include the deadline for each of the actions to be adopted. Attachment 2 also includes the dates when the CSN expects to have all the actions derived from the ENSREG's Peer Review process fully finished.

4. REFERENCES:

1. "Action plan. Follow-up of the peer review of the stress tests performed on European nuclear power plants" (25/07/2012)

2. "Compilation of recommendations and suggestions. Peer review of stress tests performed on European nuclear power plants" (26/07/2012)

3. "Stress tests carried out by the Spanish nuclear power plants. Final Report" (21/12/2011)

4. "Final Summary Report of the 2nd Extraordinary Meeting of the Contracting Parties to the Convention of Nuclear Safety". Ref: CNS/ExM/2012/04/Rev.2 (31/08/2012)

5. "2nd Extraordinary Meeting of the Contracting Parties to the Convention of Nuclear Safety. Report of the President of the 2nd Extraordinary Meeting". Ref: CNS/ExM/2012/04/Rev.2 (August 2012).

5. ACRONYMS

CSN:	Spanish Nuclear Safety Council (*Consejo de Seguridad Nuclear*)
CNS:	Convention on Nuclear Safety
CNS-EOM:	Extraordinary Meeting of the CNS (August 2012)
ENSREG:	European Nuclear Safety Regulators Group
EOP:	Emergency Operating Procedures
INSC:	Instrument for Nuclear Safety cooperation
IRRS:	Integrated Regulatory Review Service
ITC:	Complementary Technical Instruction (*Instrucción Técnica Complementaria*)
ITC-STs:	ITCs issued by the CSN on March 15th, 2012, containing the Stress Tests conclusions
KWU:	Kraftwerk Union Aktiengesellschaft
MINETUR:	Spanish Ministry of Industry, Energy and Tourism
MAEX:	Spanish Ministry of Foreign Affairs
NAcP:	National Action Plan (agreed in the ENSREG meeting held in July 2012)
NPP:	Nuclear Power Plant
SALEM:	CSN Emergency Room
SAMG:	Severe Accident management Guidelines
SSAMG:	SAMG for Shutdown conditions
TSC:	Technical Support Center
UHS:	Ultimate heat Sink
VPN:	Virtual Private Network
WENRA:	Western European Nuclear Regulators Association

ATTACHMENTS

ATTACHMENT 1: REQUIREMENTS INCLUDED IN THE CSN INSTRUCTIONS ITC-STs

In these two tables, the first column identifies the Type of requirement issued by the CSN: **Gx** stands for "generic requirements", **Ix** for "Improvement Implementation", and **Ax** means "Additional Analysis needed". Those cases where the CSN clearly expects the implementation of improvements after the analysis conclusions are categorized as **Ix**.

TABLE A-1.1: GENERIC REQUIREMENTS

T	REQUIREMENT	DATE
	TG: GENERIC REQUIREMENTS	
G1	To present a detailed schedule of all the actions necessary to fulfill the ITC-STs	15/09/2012
G2	Clarification of the meaning of Short, Medium and Long Term for these ITC-STs	n/a
G3	Generic aspects to be considered for the improvements associated to these ITC-STs (validated procedures, training, equipment operability in extreme conditions, safe storage facilities for new mobile equipment, periodic testing of new equipment.	n/a
G4	Philosophy of *Plug&Play* for the use of mobile equipment (hook-up connections)	n/a
G5	Use of realistic hypothesis in the analysis associated to these ITC-STs	n/a
	T1: NATURAL EXTERNAL EVENTS	
I1	To implement the necessary improvements to reach a seismic margin of 0.3 g for: - The two *safe shutdown paths* defined on the plant-specific IPEEE - Containment integrity - Mitigation of situations with loss of electric supply (SBO) - Severe accident management - SFP integrity and cooling (including *liner* & racks)	31/12/14
A1	Analysis (based on the most updated regulation in the USA[1]) of internal flooding produced by circumferential breaks on pipes no designed as Seismic Category I.	31/12/12
A2	Analysis of failures in other components which can produce big releases of fluids, with the objective of verifying the	31/12/12

T	REQUIREMENT	DATE
	existence of effective detection capacity, or physical barriers, appropriate for these scenarios.	Derived improvements: 31/12/14
A3	Reassessment of the dam break analysis[2] included in the Stress Tests in order to compare with the ones supporting the corresponding dams' emergency plans and to resolve any inconsistency that could appear.	31/12/12
I2	Implementation of additional plant-specific actions to increase the plant protection against external floods.	31/12/12
A4	Analysis of potential combinations of natural external events being credible at the site.	31/12/12
A5	Analysis of extreme temperatures at the site[3] with identification of existing margins and possibilities to improve the robustness of the facility against these phenomena.	31/12/14
	T2: LOSS OF SAFETY FUNCTIONS	
I3	Implementation of the appropriate protocols[4] (including periodic testing) to try to guaranty a quick recuperation of electric feeding from nearby hydroelectric stations.	31/12/14
I4	Implementation of actions to cope with prolonged SBO, including new equipment (fixed or mobile) for: - To makeup water to the RCS - To electrically supply equipment and instrumentation - To increase the availability of communications and lighting systems	31/12/14
I5	Demonstrate the feasibility of the manual (local) actions required in a situation of total loss of electric supply, including batteries, and considering the environmental conditions to be present on place.	31/12/12 +1st Reload Shutdown
I6	Demonstrate the capacity of fully closing the containment in case it is not completely established at the start of the event.	31/12/13
	T3: ACCIDENT MANAGEMENT	
I7	Analysis of the current capacities of the plant response organization (human resources) to deal with situations as the ones occurred in Fukushima, considering multiunit events and the efficient use of the new equipments. Implementation of the due improvements.	15/09/12 31/12/13
I8	Definitions of characteristics & scope of the agreements of mutual aid among nuclear plants in case of emergencies, and	15/09/12

T	REQUIREMENT	DATE
	development of the associated operative procedures	
A6	To complete the studies[5] already carried out of site accessibility in case of extreme natural events (earthquakes or flooding)	31/12/12
I9	Definition of the characteristics of the future Emergency Management Alternative Center (AEMC) and compensatory measures to be adopted up to its final implementation. AEMC final implementation.	31/06/12 31/12/15
I10	Definition of the characteristics of the future Emergency Support Center (ESC) and its incorporation in the On-site Emergency Response Plan. ESC final implementation.	31/12/12 31/12/13
I11	Analysis of the potential improvements to emergency communication systems[6] including their reinforcement for situations of prolonged SBO. Implementation of the identified improvements.	31/12/12 31/12/15
I12	Incorporation in the On-site Emergency Response Plan of "doses reference levels" consistent to the recommendations of the IAEA and ICRP.	30/04/13
I13	Definition of strategies for RCS/Containment alternative injection; analysis of the concerns related to the quality and characteristics of the water coming from "non-normal" sources (boron, sea water, etc.)	31/12/14
I14	Report on the different alternatives for the containment filtered venting system[7]. System implementation.	31/12/13 31/12/16
I15	Hydrogen control: analysis of the number and location of the future PAR[8] to be installed in the containment. Implementation of PARs.	31/12/13 31/12/16
A7	Hydrogen control: analysis of the potential H2 hazard in other buildings surrounding the Containment.	31/12/13
I16	Analysis of possible improvements to reinforce the existing capacities of depressurizing the RCS[9] (protection against "high pressure sequences"**).**	30/06/13
A8	Analysis of the impact of the existing Strategies for containment flooding over the equipments (instrumentation necessary for AM) placed inside it.	31/12/12
I17	Analysis of the instrumentation critical for accident management: Identification; Operability in case of prolonged SBO or severe accident conditions.	31/12/12

T	REQUIREMENT	DATE
A9	Analysis of potential improvements to be implemented related to the severe accidents initiated from shutdown states.	31/12/14
I18	Implementation of improvements for accidents that could happen in the Spent Fuel Pool (SFP): alternative make-up and fuel spray.	31/12/14
I19	Analysis of additional improvements to be implemented on the SFP instrumentation (range, seismic protection, environmental qualification, operability on prolonged SBO, etc.) Implementation of improvements.	31/12/12 31/12/14
I20	Analysis[10] of possible improvements on the electric supply to the Main Control Room habitability system for prolonged SBO situations.	30/06/12
I21	Analysis of the resources needed to estimate radioactive emissions: availability of the Sampling Systems, behavior of the radiation monitors in severe accident conditions, and improvements to the Emergency Radiological Monitoring Plan. Implementation of improvements.	31/12/12 31/12/14
I22	Implementation in all the plants of a ON-LINE network for environmental radioactivity alert[11], with data transmission capacity to the Control Room, the TSC and the CSN emergency Room.(SALEM)	31/12/14
I23	Analysis of human and material resources needed for radiological protection in case of a severe accident. Implementation of improvements.	31/12712 31/12/14[12]
I24	Guidelines (*ad-hoc* to GGAS[13]) for radiological protection of field operators when implementing plant recovery local actions.	31/12/13
I25	Level 2 PSA in "other modes of operation" (just to change the scheduled dates)	31/12/14

Notes to Table 1.1:

1 Some of the Spanish plants have already fulfilled it. In these particular cases, complementary aspects are now requested
2 Only in those plants that may be affected by up-stream dam breaks
3 Garoña and Almaraz plants have already performed the analysis
4 Ascó and Vandellòs plants already have these protocols
5 Vandellòs and Almaraz plants already have comprehensive studies
6 Compensatory measures must be implemented for the period up to the finalization of the task
7 Cofrentes plant has submitted to the CSN (30/09/12) an analysis of the efficiency of the suppression pool for filtering the gases to be vented
8 Trillo plant already have PARs; Garoña plant will install them in the secondary containment
9 It has not been required to Trillo plant, as it is currently implementing the B&F of the RCS
10 Cofrentes plant already completed the analysis. For this particular case, the CSN now requires the implementation of the identified measures
11 Vandellòs and Ascó plants already have this type of system. Now the CSN requires them some additional improvements
12 Except those directly associated with the AEMC implementation
13 In Trillo plant they will be developed for the so-called Severe Accident Manual and, in the future, for the new SAMGs

TABLE A-1.2: PLANT SPECIFIC REQUIREMENTS

The numbering included in the first column is a continuation of that used in table A-1.1

T	NPP	REQUIREMENT	DATE
		T1: NATURAL EXTERNAL EVENTS	
A10	**Vandellòs 2**	Analysis of seismic resistance of ignitable material storage facilities.	31/12/14
I26	**Cofrentes**	Implementation of the new Fire Protection subsystem with seismic qualification.	31/12/14
I27	**Almaraz**	Seismic qualification of Fire Protection Diesel-driven Pump.	31/12/12
I28	**Garoña**	Analysis of possible measures to reinforce the current UHS intake structure, and to allow the capacity to suction water from the Ebro River from different locations. Implementation of improvements.	31/12/12 31/12/16
		T2: LOSS OF SAFETY FUNCTIONS	
A11	**Westinghouse plants (5units)**	Follow-up of the applicable on-going international programs to improve the resistance of the Reactor Coolant Pumps seals.	n/a
A12	**Cofrentes**	Analysis of possible alternatives to remove heat from the Suppression Pool in case of prolonged SBO, before opening the Containment hardened vent.	31/12/12
I29	**Garoña**	Implementation of measures to increase the reliability of the Isolation Condenser	31/12/12
		T3: ACCIDENT MANAGEMENT	
I30	**Trillo**	Development of plant specific SAMG, including all the associated aspects already required to the other Spanish NPPs.	31/12/16

T	NPP	REQUIREMENT	DATE
A13	**Vandellòs 2** **Cofrentes**	Revision of the studies already carried out about the expected doses in the Fuel Building as a function of the lowering of the SFP water level (loss of shielding).	30/06/12
I31	**Cofrentes**	Alternative electric supply to the existing containment hydrogen igniters.	31/12/12
I32	**Cofrentes**	Additional capacity of pneumatic supply (compressed air) to the SFP inflatable gaskets.	31/12/12
A14	**Garoña**	To complete the analysis carried out about inadvertent drains of the SFP, including the revision of the seismic capacity of the components that guaranty the leak-tightness.	31/12/12

ATTACHMENT 2: RECOMMENDATIONS AND SUGGESTIONS OF THE ENSREG PEER REVIEWS CARRIED OUT IN SPAIN

The following table summarizes the recommendations and suggestions (**Rx** & **Sx**) of the first Peer Review of March 2012 along with the additional recommendations (**Fx**) stemmed during the later follow-up ("fact finding review") of September 2012.

#	PEER REVIEWS' RECOMMENDATIONS AND SUGGESTIONS (Rx/Sx/Fx)	Stress Tests final report chapter	ACTIONS	IMPLEMENTATION SCHEDULE
	PEER REVIEW RECOMMENDATIONS			
R1	*Overall it is noted that the aftermath of Fukushima will require the implementation of important modifications to the plants, together with longer term work to contribute to the international effort to identify lessons learnt from the accident and to apply its implications in the Spanish plants. To be able to cope with the workload these activities will entail, the review team* ***recommends*** *that CSN's technical assessment human resources should be reinforced.*	1.5	The Council will demand to the Spanish Government to be granted with greater capacities to properly manage human resources issues in order to reinforce his technical staffing to face the workload that is expected from the new tasks derived from Fukushima and other licensing issues.	2013
R2	*For extreme temperatures, it is recommended to consider improving the consistency between the return periods associated to the design bases for the different sites, and in line with international standards. Additional analyses are ongoing*	2.3.3	The CSN will identify the plants that need to improve the return period. A new WENRA reference level (RL) will be developed for external events. Hence, this subject will be addressed by the CSN in the implementation plan for new WENRA reference levels. Later on, the CSN will issue a new binding instruction (IS) to endorse it.	- WENRA: T.1 Natural Hazards & new RLs: 2013 - CSN actions: end of 2014
R3	*Existing design features combined with existing AM measures reveal the existence of time margins for the control or mitigation of severe accidents in Spanish NPPs. However, the assumptions underlying these margins (e.g. 30 to 40 h until the core uncovers in a*	4.3	The CSN is carrying out a detailed review of the analysis that have been presented by the licensees on September 15th, 2012 (response to the ITC-STs, point 4.1.1), about the resources needed in the licensee's Emergency Response Organization, in which the time	Preliminary evaluation of the new analysis: December, 31st 2012

#	PEER REVIEWS' RECOMMENDATIONS AND SUGGESTIONS (Rx/Sx/Fx)	Stress Tests final report chapter	ACTIONS	IMPLEMENTATION SCHEDULE
	total SBO scenario) may deserve verification (see Section 1.4). In particular, the values quoted to the review team seemed low for one plant (Trillo) and long for another (Almaraz); these values suggest an inconsistent approach to the analyses. It is recommended that these possible inconsistencies be understood in order to ensure an appropriately robust approach is taken at all plant.		available for each manual action had to be justified, including the margin until cliff edge situation is reached. The review will pay special attention to the underline hypothesis and the consistency of the calculations performed.	
R4	*The review team considers that the improvements identified by the licensees and CSN will all be important in increasing the robustness of the plants. In support of these, the following recommendations made by the peer review team, should be considered:* - *Complete the establishment of a comprehensive set of requirements for accident management integrated within the Spanish legal framework, as initiated so far by the work on the instructions on emergency operating procedures and severe accident management;* - *Include accident management as an explicit topic in CSN's safety guide on the content of the periodic safety review (PSR);* - *Develop severe accident management guidance (SAMGs) for accidents initiated during shutdown operation and accelerate plans to include SAMGs addressing mitigating aspects for spent fuel pools;* - *Fully include external events in probabilistic safety assessments including assessments of reliability of*	4.3	R4.1 & R4.3: Accident management requirements: - Conclusion and publication of the new CSN Instruction (IS) on Emergency Procedures and Severe Accident Management. - Inclusion in the IS on Severe Accident Management of: i) aspects related to Procedures and Guidelines for emergency situations initiated in shutdown and ii) the new WENRA reference levels on Accident Management. R4.2: Specific inclusion of these aspects in the next revision of CSN Safety Guide GS 1.10, which deals with the PSR. R4.4: The PSA for external events, as a possible alternative to comply with the CSN Instruction IS-25, will be considered taking into account the new WENRA reference levels (RLs) for external events.	R4.1 and R4.3: - December, 2013 - December, 2014 (*) Final implementation of the new Shutdown SAMG (SSAMG) at the Spanish NPPs is anticipated for 2016 R4.2: December, 2013 R4.4: 2014/2016

#	PEER REVIEWS' RECOMMENDATIONS AND SUGGESTIONS (Rx/Sx/Fx)	Stress Tests final report chapter	ACTIONS	IMPLEMENTATION SCHEDULE
	accident management under such conditions.			
	PEER REVIEW SUGGESTIONS			
S1	*Within the framework of the seismic hazard update claimed by CSN, it is suggested to consider to include geological and paleoseismological data characterizing the relevant active faults.*	2.3.3	- CSN issuance of a new ITC requiring the licensees to reanalyze the seismic hazard in each site. The analysis will consider the geological and paleoseismological data characterizing the relevant active faults. - Licensees' analysis to be sent to the CSN.	- ITC: May of 2013 - Implementation schedule: 2016
S2	*It is suggested to consider adopting a consistent approach for the return periods associated to heavy rain scenarios at the different sites*	2.3.3	- Implantation of the new WENRA's RLs for external events, currently in phase of development. - Incorporation of these new RLs in the Spanish regulation.	- WENRA: T.1 Natural Hazards & new RLs: 2013 - Implementation schedule: 2014
S3	*3. It is suggested to consider improving the external flood volumetric protection of buildings containing safety related SSCs. An analysis of this issue by the Licensees is ongoing and possible safety improvements should be implemented where necessary.*	2.3.3	Supervision by the CSN of the licensees' implementation plan for which this suggestion will be taken into account.	Implementation schedule: anticipated for 2013
S4	*The peer review team appreciates that some NPPs have already implemented some of their proposed measures (e.g. portable emergency equipment in the control room for communications or lighting in an SBO) and suggests CSN to follow up this topic with the remaining NPPs.*	2.3.3	Supervision by the CSN of the licensees' implementation plan for which the CSN will take into account this suggestion.	Implementation schedule: anticipated for 2013
	FOLLOW-UP RECOMMENDATIONS			
F1	*The non seismic qualification of the Fire Brigade*	N/A	Sending of a letter to require the licensees to assess	The CSN has already sent a

#	PEER REVIEWS' RECOMMENDATIONS AND SUGGESTIONS (Rx/Sx/Fx)	Stress Tests final report chapter	ACTIONS	IMPLEMENTATION SCHEDULE
	Building is an issue that should be considered for further study.		the applicability of this recommendation.	the letter requiring the licensees the due answer before May, 30 2013.
F2	*The schedule for the implementation of the planned improvements is considered appropriate, but highly demanding.* *Note: In this context, it may prove difficulties to finish all the planned modifications on time.*	N/A	The Council Plenary will remain vigilant that in the fulfillment of the required measures the safety criterion is always prioritized.	2013/2016

ATTACHMENT 3: ENSREG RECOMMENDATIONS AND SUGGESTIONS

The table summarizes the CSN approach related to the recommendations included in the ENSREG compilation of recommendations (EC&R) [2].
Notes:

1. All the issues considered are related either to the 3 topics considered (T-1 to T-3) or to an additional fourth topic corresponding to generic issues (T-G).
2. The column "Requirement ITC-STs" cross references the item of tables 1.1 & 1.2 (attachment 1) where the requirement is detailed.

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
1	*The peer review Board recommends that WENRA, involving the best available expertise from Europe, develop guidance on natural hazards assessments, including earthquake, flooding and extreme weather conditions, as well as corresponding guidance on the assessment of margins beyond the design basis and cliff-edge effects. Thereby the harmonization of licensing basis methods, the use of deterministic and probabilistic methods, the definition of probabilistic thresholds and clarification of the BDBA/DEC scenarios considered in the safety assessment should be integrated. Further studies should use state-of-the-art data and methods and address trends in hazard data.* *It should be stated, that safety assessments should benefit from timely operational experience feedback and include organizational and human aspects, and that regulations and regulatory guidance should be regularly updated. In order to avoid blind spots, a peer review of assessments should be considered.*	T-1	EC&R (2.1)	The CSN is actively participating on the on-going WENRA actions related to this issue, and is fully committed to follow all the recommendations to be adopted in the framework of the European harmonization program.	n/a
2	*The peer review Board recommends that ENSREG underline the importance of periodic safety review. In particular, ENSREG should highlight the necessity to reevaluate natural hazards and relevant plant provisions as often as appropriate but at least every 10 years.*	T-G	EC&R (2.2)	CSN will follow ENSREG actions regarding PSR improvements.	n/a

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
3	*Urgent implementation of the recognized measures to protect containment integrity is a finding of the peer review that national regulators should consider.*	T-3	EC&R (2.3)	Actions already required in the CSN ITC-STs: - Implementation of additional actions to improve the capacity to depressurize the primary circuit in order to prevent high-pressure core melt: Before Fukushima the CSN had requested to Trillo to implement the capacity to manually depressurize RCS (not previously ready). The ITCs require improvements to make this action more reliable in conditions of loss of AC and CD and also in case of severe accident - Installation in the containment of PAR (Passive Autocatalytic Recombiners) for H2 hazards. - Implementation of the capacity to make an effective filtered containment venting to prevent containment overpressure.	 - I16 - I15 - I14
4	*Necessary implementation of measures allowing prevention of accidents and limitation of their consequences in case of extreme natural hazards is a finding of the peer review that national regulators should consider.*	T-1	EC&R (2.4)	The ITC-STs contain many different actions to be implemented by the licensees, as for example: - New mobile equipment to be stored in a safe place protected from earthquakes and flooding. - Reinforcement of instrumentation & communications systems. - New on-site AEMC (Alternative Emergency Management Center) protected against earthquakes, flooding and radiation. - New national-range Emergency Support Center (ESC) able to deliver appropriate staff and	 - G3, G4, I4 - I4, I11 - I9 - I10

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				equipment in less than 24 hours.	
5	*Deterministic methods should form the basis for hazard assessment. Probabilistic methods, including probabilistic safety assessments (PSA), are useful to supplement the deterministic methods.*	T-1	n/a	This has been the CSN normal practice since many years ago.	n/a
6	*Hazard Frequency: the use a return frequency of 10-4 per annum (0.1g minimum peak ground acceleration for earthquakes) for plant reviews/ back-fitting with respect to external hazards safety cases.*	T-1	EC&R (3.1.1)	CSN is committed to follow all the WENRA actions. Return frequency is one of the issues to be agreed.	n/a
7	*Secondary Effects of Earthquakes: the possible secondary effects of seismic events, such as flood or fire arising as a result of the event, in future assessments.*	T-1	EC&R (3.1.2)	The Spanish licensees have already analyzed this issue during the Stress Tests. Significant improvements have been identified and, according to the ITC-STs, will be implemented.	I1, A1, A2
8	*Protected Volume Approach: the use a protected volume approach to demonstrate flood protection for identified rooms or spaces.*	T-1	EC&R (3.1.3)	The ITC-STs have required the implementation of further protections for buildings identified as flood-sensible.	I2
9	*Early Warning Notifications: the implementation of advanced warning systems for deteriorating weather, as well as the provision of appropriate procedures to be followed by operators when warnings are made.*	T-1	EC&R (3.1.4)	The notification of extreme weather situations is already included in on-site Emergency Plans. The CSN will verify (by 31/12/2013) their appropriateness and, if necessary, will issue a new requirement to the licensees to implement the necessary agreements with the Spanish Authorities responsible of these issues (Agency of Meteorology, AEMET and Ministry of Environment) to be alerted of coming extreme events. Previously, the CSN would contact these authorities to facilitate the contacts.	
10	*Seismic Monitoring: the installation of seismic monitoring systems with related procedures and training.*	T-1	EC&R (3.1.5)	This type of instrumentation, and the associated procedures, had been previously implemented in	n/a

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				all the Spanish plants.	
11	*Qualified Walkdowns: the development of standards to address qualified plant walkdowns with regard to earthquake, flooding and extreme weather – to provide a more systematic search for non-conformities and correct them (e.g. appropriate storage of equipment, particularly for temporary and mobile plant and tools used to mitigate beyond design basis (BDB) external events).*	T-1	EC&R (3.1.6)	During the ST process, seismic and flooding walkdowns were carried out in all the Spanish plants. Now the CSN is preparing a letter to the licensees to require the comparison of the scope and characteristics of the walkdowns done at the plants with some methodologies internationally validated for that purpose. April 2013.	n/a
12	*Flooding Margin Assessments: the analysis of incrementally increased flood levels beyond the design basis and identification of potential improvements, as required by the initial ENSREG specification for the stress tests.*	T-1	EC&R (3.1.7)	This analysis had been Partially done in some plants. Now the CSN is preparing a letter to the licensees identifying situation where it is necessary to go further in the studies. For this purpose the CDN will take into account the answers of the licensees to ITC-STs requirements A3, I2 y A4. April 2013.	n/a
13	*External Hazard Margins: in conjunction with recommendation 2.1 and 3.1.7, the formal assessment of margins for all external hazards including, seismic, flooding and severe weather, and identification of potential improvements.*	T-1	EC&R (3.1.8)	Besides the participation in all the WENRA actions, the ITC-STs have required important improvements related to margins. Nevertheless, the CSN is now preparing a new ITC to the licensees to carry out (by December 2016) a revision of the site seismic characterizations analysis. For flooding and other external events the CSN has already issued different requirements. Based on the licensees' responses, the CSN will consider issuing any additional communication. April 2013.	n/a A3, I2 A4
14	*Alternate Cooling and Heat Sink: the provision of alternative means of cooling including alternate heat sinks. Examples include steam*	T-2	EC&R (3.2.1)	All the Spanish PWR have the capacity of being (alternatively) cooled through the SGs. The ITC-	I4, I5, I28, A12

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
	generator (SG) gravity alternative feeding, alternate tanks or wells on the site, air-cooled cooling towers or water sources in the vicinity (reservoir, lakes, etc) as an additional way of enabling core cooling.			STs require improvements to increase the robustness of this strategy, both in the relief valves and the feed water sides. In relation to the BWR plants, and along other improvements, the ITC-STs require the following: - Garoña plant: i) Isolation Condenser reliability to be improved (isolation signals, make-up capacity, valves actuation); ii) Intake structure of UHS reinforced and diversified. - Cofrentes plant: i) it has the capacity of being cooled using RCIC system (turbine-pump driven by main steam able to inject high pressure water to the core); the ITC-STs require improvements to increase the robustness of this strategy ii) the ITC also requires to study additional ways to remove heat from Suppression Pool	
15	*AC Power Supplies: the enhancement of the on-site and off-site power supplies.*	T-2	EC&R (3.2.2)	The ITC-STs require improvements in this field: - Alternative external feeding: Protocols & testing - Additional (fixed) electric generators - New mobile electric generators	I3, I4
16	*DC Power Supplies: the enhancement of the DC power supply.*	T-2	EC&R (3.2.3)	The ITC-STs require the implementation of feasible non-essential DC loads dislatching of procedures (and testing). The proposals of the licensees include the capacity of feeding the batteries from mobile	I5

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				generators and the implementation of portable batteries in some specific cases.	
17	*Operational and Preparatory Actions: implementation of operational or preparatory actions with respect to the availability of operational consumables.*	T-2	EC&R (3.2.4)	This issue had been analyzed in deep during the STs, concluding in the existing capacity for at least three days and up to one week with only light supplies from outside.	n/a
18	*Instrumentation and Monitoring: the enhancement of instrumentation and monitoring.*	T2/T-3	EC&R (3.2.5)	The ITC-STs include requirements to improve primary system and containment instrumentation related to prolonged SBO situations and severe accident conditions. Also, it requires improvements on the level and temperature SFP instrumentation.	I4, I17, I19, I21, I22, A9
19	*Shutdown Improvements* *The enhancement of safety in shutdown states and mid-loop operation. Examples of improvements include, reducing or prohibiting mid-loop operation, adding dedicated hardware, procedures and drills, the use of other available water sources (e. g. from hydro-accumulators), requiring the availability of SGs during shutdown operations and the availability of feedwater in all modes.*	T2/T-3	EC&R (3.2.6)	The ITC-STs require the licensees to fulfill a complementary analysis in relation to severe accidents started from a shutdown condition. Besides that it is important to remark than in Spain a common Task Group (CSN-Industry) has been working since 2008 to improve the application of the concept of "Shutdown Safety" and to guarantee the fulfillment of the recommendations included in the document NUMARC 91-06 related to the shutdown "safety critical functions". One of the results of this group has been the restriction of the in mid-loop operation conditions in the Spanish PWR plants. Also as a consequence of this task, the licensees are developing specific procedures and	A9

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				contingencies for events started at shutdown conditions.	
20	*Reactor Coolant Pump Seals: the use of temperature-resistant (leak-proof) primary pump seals.*	T-2	EC&R (3.2.7)	The ITC-STs require to afford this issue to those plants having this weakness	A11
21	*Ventilation: the enhancement of ventilation capacity during SBO to ensure equipment operability.*	T-2	EC&R (3.2.8)	The SBO analysis done much before Fukushima, already considered this issue. Besides that, the ITC-STs requires to the licensees to analyze the possibility to strengthen the robustness of the ventilation and filtering system in the Main Control Room in case of extended SBO.	I20
22	*Main and Emergency Control Rooms: the enhancement of the main control room (MCR), the emergency control room (ECR) and emergency control centre (ECC) to ensure continued operability and adequate habitability conditions in the event of a station black-out (SBO) and in the event of the loss of DC (this also applies to Topic 3 recommendations).*	T-2	EC&R (3.2.9)	The ITC-STs require the analysis of the feasibility of improving the power supply to MCR habitability system (Cofrentes: implementation). Most of the Spanish NPP have a Remote Shutdown Station instead of a ECR; their upgrading was analyzed during the STs and considered unnecessary and complicated to implement (these stations are located in buildings without habitability systems). The new AEMCs (alternative ECCs) will have a habitability system designed for extreme situations.	I9, I20
23	*Spent Fuel Pool: the improvement of the robustness of the spent fuel pool (SFP).*	T2/T-3	EC&R (3.2.10)	The ITC-STs require the implementation of many improvements related to the SPF: - Reassessment of seismic capability for pool structure and liner, fuel racks and cooling systems	I1, I18, I19

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				- Improved level & temperature instrumentation - Pool make-up capability - Fuel spray capability - Both capacities from outside the building	
24	*Separation and Independence: the enhancement of the functional separation and independence of safety systems.*	T-2	EC&R (3.2.11)	For the existing systems, these features are incorporated in the design bases. Additionally, the new mobile equipment will be stored in a separated location protected against external and internal phenomena. In Garoña NPP, the ITC-STs also require the diversification of the UHS suction points	I28
25	*Flow Path and Access Availability: the verification of assured flow paths and access under SBO conditions. Ensure that the state in which isolation valves fail and remain, when motive and control power is lost, is carefully considered to maximize safety. Enhance and extend the availability of DC power and instrument air (e. g. by installing additional or larger accumulators on the valves).* *Ensure access to critical equipment in all circumstances, specifically when electrically operated turnstiles are interlocked.*	T-2	EC&R (3.2.12)	The SBO analysis done much before Fukushima, already considered the capacity to lead to the correct position all the affected valves. The ITC-STs require the implementation of many improvements related to these issues, especially in relation to the capability to perform local actions in extreme conditions as DC lost or harsh environments. The accessibility in case of accident to critical areas is included within the scope of the ITC that is referenced in the section 3.2 of this document.	I5
26	*Mobile Devices: the provision of mobile pumps, power supplies and air compressors with prepared quick connections, procedures, and staff training with drills.*	T-2	EC&R (3.2.13)	The ITC-STs explicitly require (points 1.3 & 1.4) the implementation of the needed modifications, procedures and training to allow an efficient use of the new mobile equipment, under the	G3, G4, I4

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				philosophy of *plug & play*.	
27	*3.2.14 Bunkered/Hardened Systems* *The provision for a bunkered or "hardened" system to provide an additional level of protection with trained staff and procedures designed to cope with a wide variety of extreme events including those beyond the design basis (this also applies to Topic 3 recommendations).*	T2/T-3	EC&R (3.2.14)	As already mentioned the ITC-STs explicitly require that new mobile equipment will be stored in a safe location, well protected against external and internal events, and the implementation of the needed procedures and training to allow an efficient use of new equipments.	G3, G4
28	*Multiple Accidents: the enhancement of the capability for addressing accidents occurring simultaneously on all plants of the site.*	T2/T-3	EC&R (3.2.15)	The ITC-STs require the analysis and implementation of the modifications needed to cope with such an event.	I4, I5, I7
29	*Equipment Inspection and Training Programs: the establishment of regular programs for inspections to ensure that a variety of additional equipment and mobile devices are properly installed and maintained, particularly for temporary and mobile equipment and tools used for mitigation of BDB external events. Development of relevant staff training programs for deployment of such devices.*	TG/ T2/T-3	EC&R (3.2.16)	As already mentioned the ITC-STs explicitly require the implementation of the needed procedures and training to allow an efficient use of new equipment, and the definition of the appropriate periodic testing programs.	G3
30	*Further Studies to Address Uncertainties: the performance of further studies in areas where there are uncertainties. Uncertainties may exist in the following areas:* - *The integrity of the SFP and its liner in the event of boiling or external impact.* - *The functionality of control equipment, feedwater control valves, and SG relief valves, main steam safety valves, isolation condenser flow path, containment isolation valves as well as depressurization valves) during the SBO to ensure that cooling using natural circulation would not be interrupted in a SBO (this is partially addressed in recommendation 3.2.10).*	T-2	EC&R (3.2.17)	- The CSN has required different actions to protect the fuel in the SFP including both preventive and mitigative measures. Nevertheless the CSN is preparing a letter to the licensees requiring this SFP analysis. - The SBO analysis done much before Fukushima, already considered this capacities. See Spain Stress Tests Report, chapter 4.2.1.b). - For the case of widespread damage the ITC-STs require the licensees the implementation of : ° New on-site AEMC (Alternative Emergency	I1, I18, I19, I32 A13, A14

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
	The performance of additional studies to assess operation in the event of widespread damage, for example, the need different equipment (e.g. bulldozers) to clear the route to the most critical locations or equipment. This includes the logistics of the external support and related arrangements (storage of equipment, use of national defense resources, etc.).			Management Center) with appropriate mobile equipment. ° New national-range Emergency Support Center (ESC) able to deliver appropriate equipment in less than 24 hours ° Definitions of characteristics & scope of the agreements of mutual aid among nuclear plants in case of emergencies, and development of the associated operative procedures ° To complete the studies already carried out of site accessibility in case of extreme natural events (earthquakes or flooding)	
31	*WENRA Reference Levels: the incorporation of the WENRA reference levels related to severe accident management (SAM) into their national legal frameworks, and ensures their implementation in the installations as soon as possible.*	T-3	EC&R (3.3.1)	- The future CSN IS on accident management (legally binding), scheduled for 2013, will incorporate explicitly all the current WENRA reference levels related to AM. - Besides that, the ITC-STs had already required most of the expected actions, as for example: implementation of H2 PRAs, capacity to do containment filtered venting, protection against high pressure sequences, capacity to flood the containment, etc.	n/a I13, I14, I15, A7, I16, A8, I17, A9

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
32	*SAM Hardware Provisions: adequate hardware provisions that will survive external hazards (e.g. by means of qualification against extreme external hazards, storage in a safe location) and the severe accident environment (e.g. engineering substantiation and/or qualification against high pressures, temperatures, radiation levels, etc), in place, to perform the selected strategies.*	T-3	EC&R (3.3.2)	The ITC-STs require licensees to implement a different aspects related to this issue: - Increase seismic margins of critical components - New mobile equipment to be stored in a safe location - Instrumentation adequate for severe accident - Actions to make more feasible the critical local actions	I1 G3 I17 G4, I5, I24
33	*Review of SAM Provisions Following Severe External Events: the systematic review of SAM provisions focusing on the availability and appropriate operation of plant equipment in the relevant circumstances, taking account of accident initiating events, in particular extreme external hazards and the potential harsh working environment.*	T-3	EC&R (3.3.3)	The ITC-STs require licensees to implement a different aspects related to that issue: - Increase seismic margins of critical components - Mobile equipment e stored in a safe location - Actions to make more feasible different critical local actions - Instrumentation able to survive to severe accident conditions	I1 G3 G4, I5, I24 I17
34	*Enhancement of Severe Accident Management Guidelines (SAMG): in conjunction with the recommendation 2.4, the enhancement of SAMGs taking into account additional scenarios, including, a significantly damaged infrastructure, including the disruption of plant level, corporate-level and national-level communication, long-duration accidents (several days) and accidents affecting multiple units and nearby industrial facilities at the same time.*	T-3	EC&R (3.3.4) and CNS-FSR (E.21)	The ITC-STs require Trillo NPP to develop and implement plant specific SAMGs, and to the Westinghouse plants to improve the capacity of flooding the reactor cavity and include it on the corresponding SAM guide. Additionally to the ITC-STs the CSN has issued other ITCs (see §3.3 of this report) where the implementation of Guides for Extended Damage situations have been requested.	I30 I13, A8

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
35	*Analysis of human resources, communication, personnel training, and guidance during severe long term accidents (esp. multi-unit) and validation of effectiveness through exercises.*	T-3	CNS-FSR (E.24)	The ITC-STs require licensees to analyze the current capacity of the emergency staffing to cope with this kind of situations, and the improving of the communications' capabilities. Exercises/drills are included in the validation process of capacities of the plant Emergency Response Organization	I7, I21 I4, I11, I21, I22
36	*SAMG Validation: the validation of the enhanced SAMGs.*	T-3	EC&R (3.3.5)	The CSN had previously required the validation of SAMGs. The verification of this aspect is included in the CSN systematic inspection plans.	n/a
37	*SAM Exercises* *Exercises aimed at checking the adequacy of SAM procedures and organizational measures, including extended aspects such as the need for corporate and nation level coordinated arrangements and long-duration events.*	T-3	EC&R (3.3.6)	Once the new improvements are implemented at the plants, the CSN will reconsider the existing content of the scenarios for exercises and drills. Currently, SAMGs are exercised during the yearly drills (obviously, only when the drill sequence reaches the severe accident domain).	n/a
38	*SAM Training* *Regular and realistic SAM training exercises aimed at training staff. Training exercises should include the use of equipment and the consideration of multi-unit accidents and long-duration events. The use of the existing NPP simulators is considered as being a useful tool but needs to be enhanced to cover all possible accident scenarios.*	T-3	EC&R (3.3.7)	The CSN had previously required (and inspected) the execution of realistic exercises. The CSN will reconsider the existing content of the training exercises, once the new improvements are implemented at the plants. The CSN is following training simulators (for severe accidents) national & international experience, and will eventually make the due decisions.	n/a
39	*Extension of SAMGs to All Plant States: the extension of existing SAMGs to all plant states (full and low-power, shutdown), including accidents initiated in SFPs.*	T-3	EC&R (3.3.8)	The ITC-STs require to each licensee a preliminary study on this issue. The future IS on accident management (legally	A9

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				binding), scheduled for 2013, will consider explicitly the new aspects related to this issue that could arise from the ongoing WENRA tasks (new reference levels).	
40	*Improved Communications: the improvement of communication systems, both internal and external, including transfer of severe accident related plant parameters and radiological data to all emergency and technical support centre and regulatory premises.*	T-3	EC&R (3.3.9)	All the Spanish plants have fully available such data transmission system. Nevertheless, the ITC-STs require licensees to improve the current internal and external communications systems.	I4, I11, I21, I22
41	*Presence of Hydrogen in Unexpected Places: the preparation for the potential for migration of hydrogen, with adequate countermeasures, into spaces beyond where it is produced in the primary containment, as well as hydrogen production in SFPs.*	T-3	EC&R (3.3.10)	The ITC-STs require to the licensees the analysis the possibility and the consequences of the H2 leaks out of the primary containment. The presence of H2 in the different areas of the plant will be taken into account by the licensees in the development of the future SAMGs.	A7
42	*Large Volumes of Contaminated Water.* *The conceptual preparations of solutions for post-accident contamination and the treatment of potentially large volumes of contaminated water.*	T-3	EC&R (3.3.11)	Additionally to the ITC-STs the CSN has issued other ITCs (see §3.3 of this report) where the implementation of the appropriate actions to be able to deal with this issue have been requested.	n/a
43	*Radiation Protection: the provision for radiation protection of operators and all other staff involved in the SAM and emergency arrangements.*	T-3	EC&R (3.3.12)	The ITC-STs require licensees to some relevant improvements for this issue: - Analyze the need of increasing the human and material resources - Analyze the limitations for field operators to implement local actions and propose improvements - To develop complementary guidelines (parallel to the SAMG) for field operators radiological	I21, I23 I5 I24

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				protection.	
44	*On Site Emergency Center. The provision of an on-site emergency center protected against severe natural hazards and radioactive releases, allowing operators to stay onsite to manage a severe accident.*		EC&R (3.3.13)	As previously mentioned, the ITC-STs include the licensee's proposal to implement at each site a new on-site AEMC (Alternative Emergency Management Center) protected against earthquakes, flooding and radiation.	I9
45	*Support to Local Operators. Rescue teams and adequate equipment to be quickly brought on site in order to provide support to local operators in case of a severe situation.*	T-3	EC&R (3.3.14)	As previously mentioned, the ITC-STs include the licensee's proposal to implement a new national-range Emergency Support Center (ESC) able to deliver appropriate staff and equipment in less than 24 hours.	I10
46	*Level 2 Probabilistic Safety Assessments (PSAs)* *A comprehensive Level 2 PSA as a tool for the identification of plant vulnerabilities, quantification of potential releases, determination of candidate high-level actions and their effects and prioritizing the order of proposed safety improvements. Although PSA is an essential tool for screening and prioritizing improvements and for assessing the completeness of SAM implementation, low numerical risk estimates should not be used as the basis for excluding scenarios from consideration of SAM especially if the consequences are very high.*	T-3	EC&R (3.3.15)	Each Spanish plant developed some years ago his specific PSA level 2 for internal events started at power conditions. Level 2 at "other operating modes" has been required to all the licensees to be completed in 2014.	I25
47	*Severe Accident Studies: The performance of further studies to improve SAMGs. Examples of areas that could be improved with further studies include:* *- The availability of safety functions required for SAM under*	T-3	EC&R (3.3.16)	- The ITC-STs require licensees different actions related to these issues, as for example: seismic improving margins for SAM equipment, actions to deal with extended SBO, analysis of	I1, I4, I5, I6, I13, I14, I15, I16, A8, I17, A9, etc.

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
	different circumstances. - *Accident timing, including core melt, reactor pressure vessel (RPV) failure, basemat melt-through, SFP fuel uncovery, etc.* - *PSA analysis, including all plant states and external events for PSA levels 1 and 2.* - *Radiological conditions on the site and associated provisions necessary to ensure MCR and ECR habitability as well as the feasibility of AM measures in severe accident conditions, multi-unit accidents, containment venting, etc.* - *Core cooling modes prior to RPV failure and of re-criticality issues for partly damaged cores, with un-borated water supply.* - *Phenomena associated with cavity flooding and related steam explosion risks.* - *Engineered solutions regarding molten corium cooling and prevention of basemat melt-through.* - *Severe accident simulators appropriate for NPP staff training.*			improvements for accidents initiated at shutdown conditions, instrumentation survival, etc. - Accident timing was analyzed during the STs - PSA level 1 is completed; level 2 will be finished in 2014 and external events under discussion. - The ITC-STs require the analysis of the feasibility of improving the power supply to MCR habitability system (Cofrentes: implementation). - ECR upgrade was analyzed during the STs and considered difficult to afford for the current design (remote shutdown panels are located in buildings without habitability systems). Instead, the new AEMCs (alternative ECCs, with appropriate habitability system for extreme events: earthquake, flooding & radiological protection), which will be at the sites, will allow for an adequate accident management, consistent with the use of fixed and mobile equipment. - The ITC-STs require the analysis of the feasibility and the backdrops of the existing/new alternative injection strategies. - Current SAMGs already cover cavity flooding - Current SAMGs appropriately cover the issue of molten corium cooling - CSN is following training simulators (for severe accidents) national & international experience,	n/a I25 I20 I13 n/a n/a n/a

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN	Requirement ITC-STs
				and will eventually make the due decisions.	
48	*Containment venting for new NPPs*	T-3	CNS-FSR (23.c)	Not applicable in Spain	

ATTACHMENT 4: CNS-EM COMMITMENTS AND RECOMMENDATIONS

This table contains detailed information about how have been considered in Spain the aspects included in the two reports issued after the CNS-EOM:

- The commitments of the contracting parties contained in the Annex of the Final Summary report [4]
- The different issues presented by the *rapporteurs* of topics 1 to 3 during the meeting sessions that were lately collected in the President's Report [5]

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN
1	*Take the IAEA Safety Standards into account in enhancing nuclear safety.*	T-G	CNS-FSR (1-Annex)	See chapter 3.2.3.c of this document.
2	*Include information about how it has taken or intends to take the IAEA Safety Standards (including, in particular, the Safety Fundamentals and Requirements) into account in implementing its obligations under the Convention on Nuclear Safety.*	T-G	CNS-FSR (2-Annex)	The WENRA harmonization effort has implied the incorporation to the Spanish national regulation and standards of most of the relevant IAEA requirements.
3	*Ensure that its regulatory body is effectively independent in making regulatory judgments based on scientific and technological grounds and taking enforcement actions and that it has functional separation from entities having responsibilities or interests, such as the promotion or utilization of nuclear energy (including electricity production), that could conflict with safety or other important regulatory objectives or otherwise unduly influence the decision making of the regulatory body.*	T-G	CNS-FSR (3-Annex)	See detailed explanation included in Chapter 3.2.1 of this document.
4	*Ensure the effectiveness of its regulatory body by providing for adequate legal authority, sufficient human and financial resources, staff competence, access to necessary external expertise for its decision-making based on adequate scientific and technical knowledge, access to international cooperation, and other matters needed for fulfilling its responsibilities for the safety of nuclear installations.*	T-G	CNS-FSR (4-Annex)	See detailed explanation included in Chapter 3.2.1 of this document.
5	*Ensure that its regulatory body requires a licensee for a nuclear installation to have adequate expertise and resources to fulfill its responsibility for the safe operation of the nuclear installation, including effective response to any*	T-G	CNS-FSR (5-Annex)	The CSN Instructions IS-11 and IS-12 respectively contains the training requirements for the personal with and without license. Both Instructions include requirements related to

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN
	accident and mitigation of its consequences.			severe accident situations. The CSN maintains a systematic overview of the safe operation of the plants, including the fields of human resources, training, emergency drills, etc.
6	*Ensure that its regulatory body operates in a transparent and open manner, taking into account legitimate concerns over security and other sensitive interests that might be adversely affected by the public disclosure of particular information.*	T-G	CNS-FSR (6-Annex)	See detailed explanation included in Chapter 3.2.1 of this document.
7	*Include information on its efforts to ensure the independence, effectiveness and transparency of its regulatory body.*	T-G	CNS-FSR (7-Annex)	See detailed explanation included in Chapter 3.2.1 of this document.
8	*Host, as appropriate, an international peer review mission of its regulatory framework governing the safety of nuclear installations, if the Contracting Party has an operating nuclear installation.*	T-G	CNS-FSR (8-Annex)	An IRRS mission was carried out in 2008 with excellent results. Lately the corresponding follow-up mission verified in 2010 the appropriate implementation of the previously issued recommendations.
9	*Host regularly, as appropriate for the size and number of the nuclear installations within that Contracting Party, international peer review missions of the operational safety of its nuclear installations, if the Contracting Party has an operating nuclear installation.*	T-G	CNS-FSR (9-Annex)	The Spanish NPPs are frequently visited by international peer reviews missions (WANO).
10	*Host international peer review missions on integrated nuclear infrastructure and other relevant matters, including site and design safety reviews prior to commissioning its first nuclear installation.*	T-G	CNS-FSR (10-Annex)	This aspect is not applicable to the current situation in Spain.
11	*Include information on any international peer review missions under paragraph 1, 2 or 3 of this section that the Contracting Party has hosted in the period between two review meetings of the Contracting Parties including a summary of the findings, recommendations and other results of the missions, actions taken to address these results, and plans for follow-up missions.*	T-G	CNS-FSR (11-Annex)	All this information can be accessed in the documents generated by the IRRS missions mentioned in the item#8 of this table.
12	*Make its National Report and any written questions and responses relating*	T-G	CNS-FSR	This is and has always been the CSN policy related to this

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN
	to that report publicly available, with the exception of any particular item of information that would adversely affect security or other sensitive interests if publicly disclosed and request the IAEA to maintain this information, other than any information covered by the above exception, on a website open to the public.		(11-Annex)	type of reports.
13	*Make any international peer review mission reports, any follow-up reports or any national responses to such reports publicly available, with the exception of any particular items of information that would adversely affect security or other sensitive interests if publicly disclosed and request the IAEA to maintain this information, other than any information covered by the above exception, on a website open to the public.*	T-G	CNS-FSR (11-Annex)	Already done.
14	*Include information in its National Report on its efforts to enhance openness and transparency in the implementation of its obligations under the Convention on Nuclear Safety.*	T-G	CNS-FSR (11-Annex)	See detailed explanation included in Chapter 3.2.1 of this document.
15	*Enhance the robustness of the peer review of national reports submitted under the CNS through the preparation and submission of thorough reports that present successes and challenges and the frank discussion of these reports.*	T-G	CNS-FSR (11-Annex)	The current NAcP prepared to give answer to the ENSREG proposals is an excellent way to rightly fulfill this CNS recommendation.
16	*Results of reassessment of external hazards with emphasis on changes on licensing basis*	T-1	CNS-PR	The ST's analysis carried out by the licensees and assessed by the CSN has included an extensive review of the external hazards affecting to each Spanish NPP site. The subsequent ITC-STs include many improvements and request for additional analysis. All the requirements issued in these ITCs are part of the Licensing Bases of the plants.
17	*Peer reviews of assessments and their results*	T-1	CNS-PR	See the peer review explanation in Chapter 3.1.b of this document.
18	*Additional improvements taken or planned based on reassessments*	T-1	CNS-PR	See the improvements explanation in Chapter 3.1.a of this

#	MEASURE/REQUIREMENT	TOPIC	SOURCE	STATUS IN SPAIN
				document.
20	*Regulatory changes concerning external events are already expected to be reported*	T-1	CNS-PR	The CSN is preparing a new ITC to the licensees to make a reassessment of the earthquake hazards at each site (to be issued by December 2012).
21	*Increasing plant robustness to face unexpected challenges*	T-2	CNS-PR	See the improvements explanation in Chapter 3.1.a of this document.
22	*Back-fits on existing plants and design improvements for new NPPS*	T-2	CNS-PR	See the improvements explanation for existing plants in Chapter 3.1.a of this document. Currently, no new plants are expected in Spain.
23	*Safety objectives to minimize off-site long term contaminations*	T-2	CNS-PR	See information about this topic in Chapter 3.3.a of this document.
25	*Safety requirements for equipment used in design extension conditions*	T-2	CNS-PR	Following the WENRA harmonization Plan, the CSN is preparing a new instruction (IS) to cover aspects related to NPP´s Accident Analysis. This IS incorporates a specific chapter for "deign extension".
26	*Improvements of Regulations, Guidelines and Procedures*	T-3	CNS-PR	Besides the ongoing WENRA harmonization Plan, this organization is preparing additional Reference Levels to take into account the Fukushima lessons learnt.
27	*Improvements in instrumentation, systems and components*	T-3	CNS-PR	See Chapter 3.1.a of this document.
28	*Improvements on structures*	T-3	CNS-PR	See Chapter 3.1.a of this document.
29	*Multi-unit aspects*	T-3	CNS-PR	See Chapter 3.1.a of this document.
30	*Spent fuel aspects*	T-3	CNS-PR	See Chapter 3.1.a of this document.
31	*Human organizational aspects*	T-3	CNS-PR	See Chapter 3.1.a of this document.