

A Preliminary Survey of Worldwide Activities by RR's Operators Following the Fukushima-Daiichi NPPs Fuel Melting

Y. Barnea(1), N. Peld(1), A. Shokr(2), D. Ridikas(3)

(1)RRS/NEFW, (2)RRSS/NSNI, (3)PS/NAPC



IAEA

International Atomic Energy Agency

BACKGROUND (1)

Following the events at Fukushima-Daiichi (F-D) NPP there has been a worldwide initiative to perform complementary safety assessments of nuclear installations. Correspondingly, the community of research reactor (RR) stakeholders, operators and regulators expressed publically their readiness to re-evaluate and update the safety status of the facilities facing a possibility of similar external events. Although the RRs are generating (on average) one thousand times lower energy than NPPs, and accordingly their source term is reduced, there are important common safety related topics to be checked and revised (i.e.: the seismic design, blackout, safety design scenarios during the loss of ultimate heat sink, accident management, regulations, organization/crisis management, etc..).

BACKGROUND (2)

- ❖ On (mid) June 2011 the TWGRR asked the RRS/NEFW to present in the ICRR (Rabat, November 2011), what was the impact of the Fukushima-Daiichi (F-D) NPPs core melting events on the RRs stakeholders (i.e. operators, regulators etc...).
- ❖ On July the IAEA posted a questionnaire, on the Conference website, with an ambitious due date to receive the answers until October 16.
- ❖ The following presentation is the *preliminary* analysis of the responds we have received.
- ❖ A further comprehensive examination of the replies will be presented in RRFM-2012 as well as posted in the RRS/IAEA website in the next few months.

International Conference on Research Reactors: Safe Management and Effective Utilization

14-18 November 2011, Rabat, Morocco

Questionnaire 2 for Final Panel Discussion

Dear Colleague,

Following the events at Fukushima-Daiichi (F-D) NPP there has been a worldwide initiative to perform complementary safety assessments of nuclear installations. Correspondingly, the community of research reactor (RR) stakeholders, operators and regulators expressed publically their readiness to re-evaluate and update the safety status of the facilities facing a possibility of similar external events.

The purpose of this questionnaire is to collect from Member States operating RRs (≥ 1 MW) **preliminary information** on the types of activities initiated as a result of the unprecedented F-D accident last March. The questionnaire contains *two general questions and three specific questions with multiple proposed answers*. Please note that it is acceptable to mark more than one answer for each question.

The preliminary results of the questionnaire will be reported and discussed in a plenary session during the International Conference on Research Reactors: Safe Management and Effective Utilization, in **Rabat, Morocco, 14-18/11/2011**.

Deadline: you should submit this questionnaire electronically to Y.Barnea@iaea.org and D.Ridikas@iaea.org (Subject: RR Conference CN-188, Panel Questionnaire 2) not later than **Friday, 14 October 2011!**

Please provide, when possible, your

Country:

Name*:

Title/position:

Affiliation:

E-mail*:

**The names and addresses will not be disclosed to any third parties but are requested, should we need further clarification or follow up regarding the questionnaire.*

Part A: General questions

1. What was done in your organization following the F-D event?

- No dedicated activity (e.g. as it was considered an event specific only to NPPs).
- Short re-evaluation of the Design-Basis Accidents (DBA's) and the Emergency Preparedness Plan (EPP).
- A complete re-evaluation of the Safety Analysis Report (SAR) and EPP.
- Other dedicated actions (please elaborate).

2. Considering the social impact and the public acceptance of RRs in your country, following the March 11 accident, how would you describe the impact of the F-D event?

Part B: Specific questions

3. Considering that the new Safety Assessment (SA) includes re-evaluation of the SAR and the safety margins, how can you describe the outcome of your actions?

- Included new Postulated Initiating Events (PIE's), e.g., no available power supply, etc.
- Included a combination of accidental External Events, e.g., earthquake & total loss of electrical power supply, flooding & fire, etc.
- Included new or updated database on the magnitude and probability of external events.
- None of the above (In this case, pls. describe your activity).

4. Considering the reactor Utilization/Operation plan, what was revised following the F-D event?

- The Operating Limiting Conditions.
- The SA of high pressure and temperature experimental devices (e.g., criteria of design, PIEs, etc.)
- The Ageing Management programme.
- The maintenance programme concept.
- None of the above (In this case, pls. describe your activity)

5. Considering the reactor EPP, what was asked for to be done following the F-D event?

- New/Update of Emergency Procedures. (e.g., classification, action levels, planning zones, etc.)
- Revision of the Emergency Response plan.
- Revision/modification of the Emergency Equipment.
- None of the above. (In this case, pls. describe your activity).

The PROFILE of the participants in the survey

56 Answers (29 MS).

16 Answers from non-operating organizations (i.e., regulators).

6 Answers from small RRs (<1MW).

1-2 Answers from projects on future RR.

1 Answer with a decommissioned RR.

6 Answers from Russian Federation.

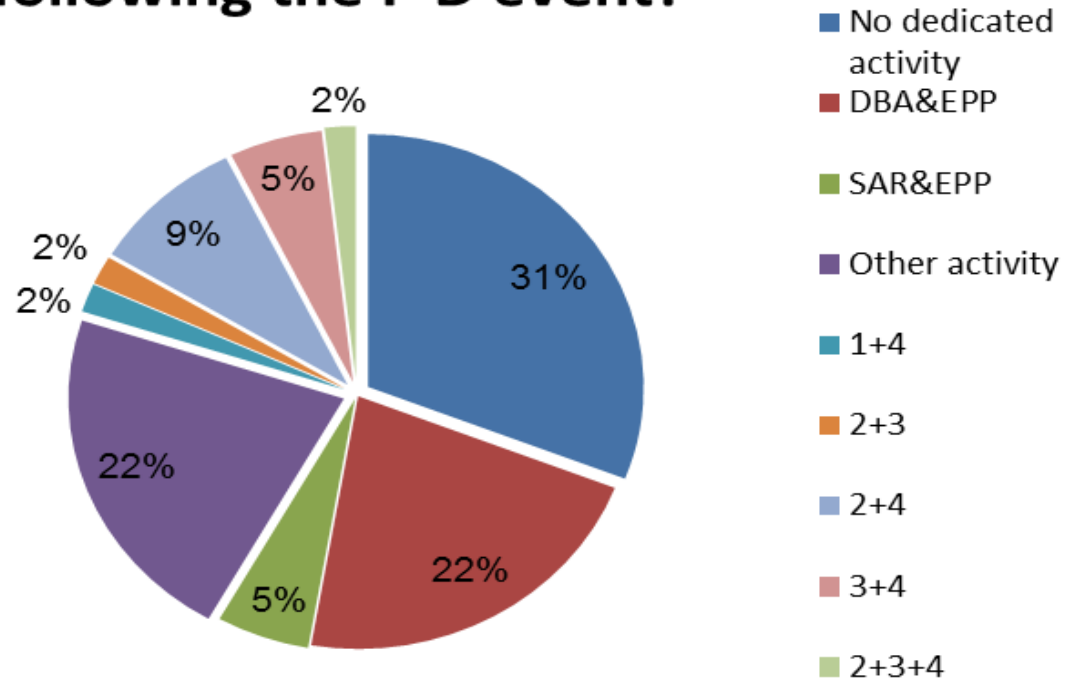
5 Answers from France.

4 Answers from USA.

Thank you all!

Q1

What was done in your organization following the F-D event?



[1] No dedicated activity (e.g. as it was considered an event specific only to NPPs).

[2] Short re-evaluation of the Design-Basis Accidents (DBA's) and the Emergency Preparedness Plan (EPP)

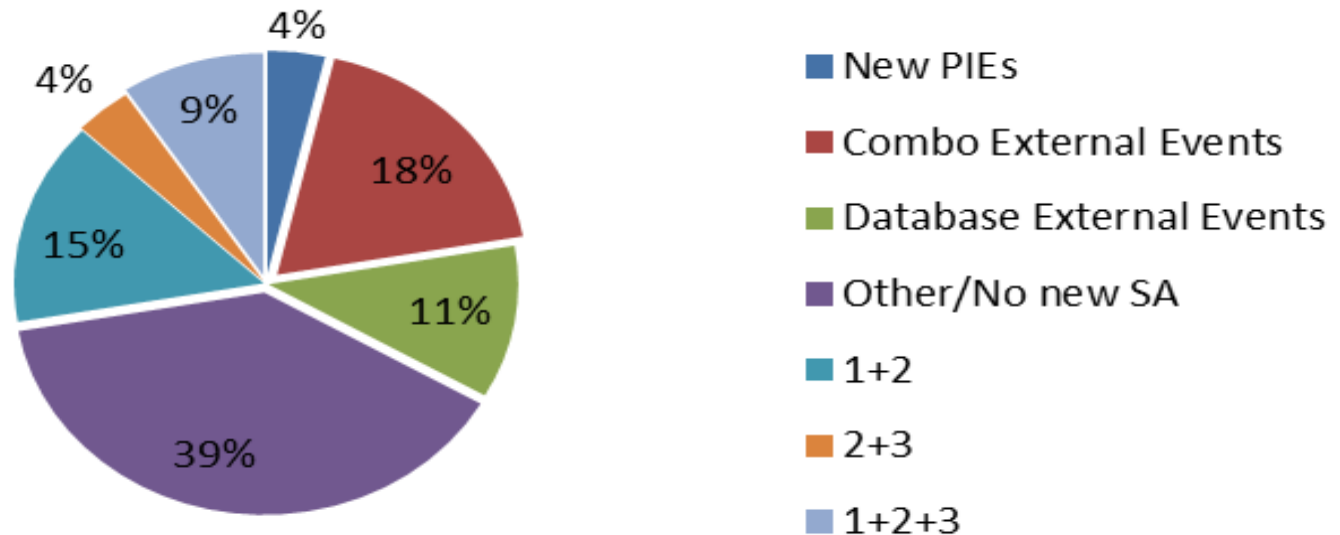
[3] A complete re-evaluation of the Safety Analysis Report (SAR) and EPP.

[4] Other dedicated actions (please elaborate).



Q3

How would you describe the outcome of the new Safety Assessment?



[1] Included new Postulated Initiating Events (PIE's), e.g., no available power supply, etc.

[2] Included a combination of accidental External Events, e.g., earthquake & total loss of electrical power supply, flooding & fire, etc.

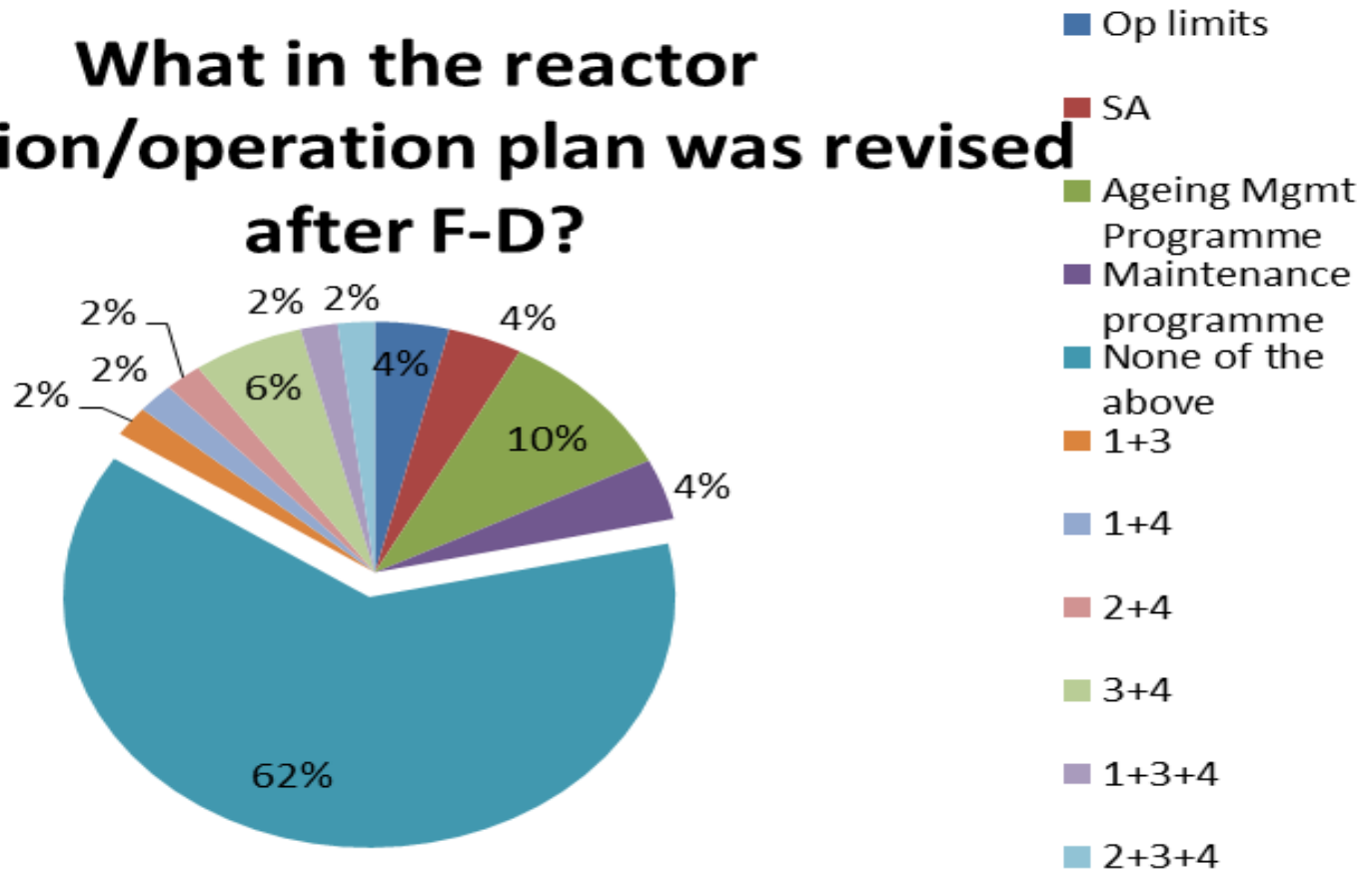
[3] Included new or updated database on the magnitude and probability of external events.

[4] None of the above (In this case, pls. describe your activity).



Q4

What in the reactor utilization/operation plan was revised after F-D?



[1] The Operating Limiting Conditions.

[2] The SA of high pressure and temperature experimental devices (e.g., criteria of design, PIEs, etc.)

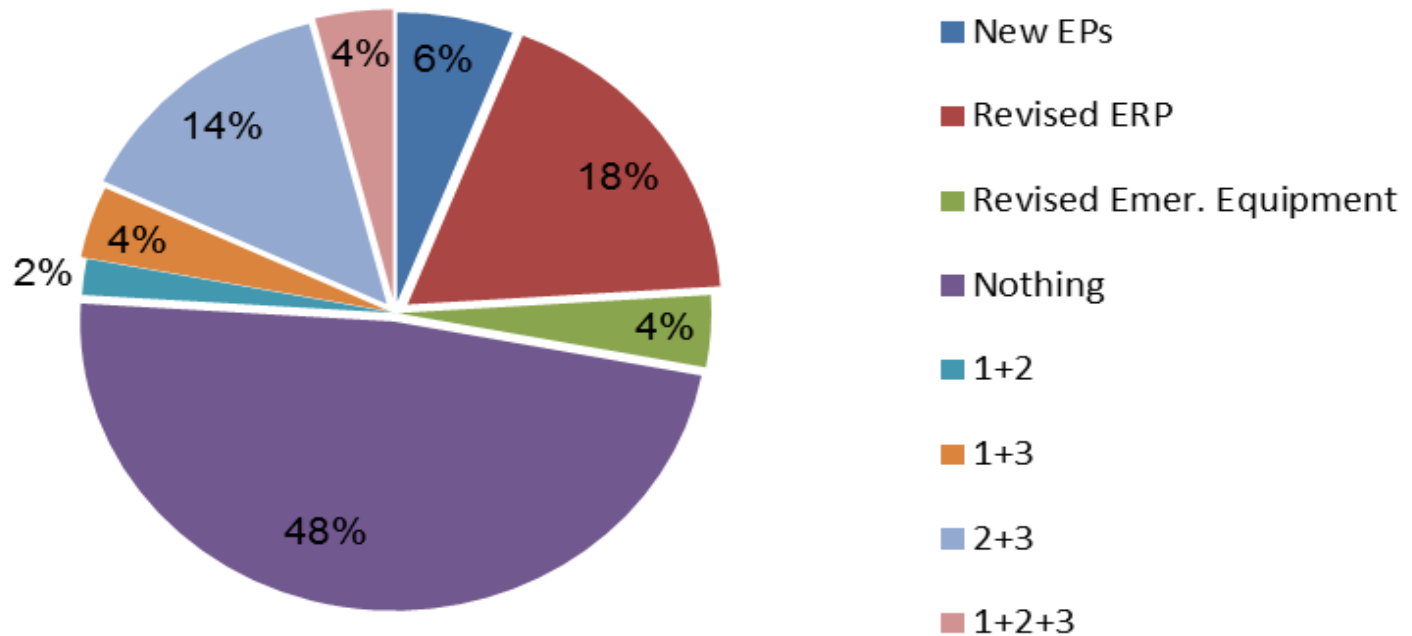
[3] The Ageing Management programme.

[4] The maintenance programme concept.

[5] None of the above (In this case, pls. describe your activity)

Q5

Considering the reactor EPP, what was asked to be done following F-D?



[1] New/Update of Emergency Procedures. (e.g., classification, action levels, planning zones, etc.)

[2] Revision of the Emergency Response plan.

[3] Revision/modification of the Emergency Equipment.

[4] None of the above. (In this case, pls. describe your activity).

Preliminary Conclusions

- ❖ It is remarkable that 69% of the responds indicate that measures were taken after the F-D NPPs core melting.
- ❖ 18% of the responds indicate that the new SA include a combination of accidental EE, while additional 2% already performed and 11% intend to include new or updated database on the magnitude and probability of these events.
- ❖ 10% revised the OLC in the utilization / operation plan.
- ❖ 16% revised the Ageing Management plan and additional 4% changed the maintenance programme concept.
- ❖ 52% revised the EPP, 75% of them revised the ERP.
- ❖ *PLEASE NOTE THAT THE RESULTS ARE REPORTED WITHOUT A CLEAR KNOWLEDGE WHETHER THE ACTIVITIES WERE ALREADY COMPLETED OR NOT.*

YOU ARE WELCOME TO ADDRESS THE SUBJECT AS WELL
AS THE SURVEY RESULTS DURING THE PANEL DISCUSSION
on the *Panel Session – Friday 10:30-12:30.*

Thank you for your attention !



Y.Barnea@iaea.org

