“Post Fukushima Action – A perspective from the IAEA”

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IAEA response to Fukushima Daii-chi accident includes:

**Nuclear Safety Action Plan:**
Defines a programme of work to strengthen the global nuclear safety framework

**IAEA Fukushima Report:**
Assessment of the accident that is technically comprehensive, factual and balanced, addressing the causes and consequences as well as lessons learned.
Background

Action Plan built on:

- IAEA Ministerial Conference on Nuclear Safety *(Jun 2011)*
  - Ministerial Declaration
  - DG Proposals
  - Ministerial Working Sessions
- 1st IAEA Fact Finding Mission to Japan *(May/Jun 2011)*
- INSAG Letter Report *(Jul 2011)*
- Consultation with Member States

Action Plan unanimously endorsed at the IAEA General Conference *(September 2011)*
Key facts:

- 12 key actions, including 39 sub-actions
- Current Status: more than 906 IAEA activities. ~ 59% have been completed
- Dec 2011-Dec 2013: ~ 20 M€ expenditures

Focusing on transparency: [http://www.iaea.org/newscenter/focus/actionplan/](http://www.iaea.org/newscenter/focus/actionplan/)
Action Plan success depends on Stakeholders involvement

- Member States

- Regulatory bodies
- Operating Organizations
- Nuclear industry
- Technical Support Org. (TSO)
- Research institutions
- Education institutions

- Other International Organizations

- IAEA (NSAT)

- European Commission
- CTBTO
- FAO
- ICRP
- ILO
- INSAG
- OECD/NEA
- WANO
- WHO
- WMO
- UNSCEAR

Nuclear Energy
Nuclear Applications
Nuclear Safety
Technical Cooperation
Office of Legal Affairs
Monaco & Seibesdorf labs
IAEA Missions to Japan

- **Fukushima Accident**
  - *Mar 2011*

- **Fact-Finding Mission**
  - *May 2011*

- **IAEA Action Plan**
  - *Sept 2011*

- **Review Japan Safety Assessments NPPs**
  - *Jan 2012*

- **1st Mission**
  - *Oct 2011*

- **Expert Mission**
  - Onagawa NPP
  - *Aug 2012*

- **Remediation of large contaminated area off-site Fukushima NPP**

- **2nd Mission**
  - *Dec 2013*

- **Peer Review Mid-and-Long-Term Roadmap towards Decommissioning**

- **Follow-up**
  - *Oct 2013*

- **Remediation of large contaminated area off-site Fukushima NPP**

2011 2012 2013 2014
International Experts’ Meetings (IEM’s)

Action on communication: enhance transparency and effectiveness of communication and improve dissemination of information

Main goal of the IEM’s:

- Analyse relevant technical aspects from the Fukushima Daiichi accident
- Learn the lessons from the Fukushima Daiichi accident
- Share lessons learned

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<th>IEM 1: Reactor and Spent Fuel Safety</th>
<th>IEM 2: Transparency &amp; Communication</th>
<th>IEM 3: Protection Against External Events</th>
<th>IEM 4: Decommissioning and Remediation</th>
<th>IEM 5: Human &amp; Organizational Factors</th>
<th>IEM 6: Radiation protection</th>
<th>IEM 7: Severe accident management</th>
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IEM 8: Research and Development - 2015
Strengthening Emergency Preparedness and Response

Safety Standards and guidelines in EPR

• Review of the GS-R-2 is in the final stage
• Two new Safety Guides are under development
  ✓ Arrangements for the Termination of a Nuclear or Radiological Emergency
  ✓ Emergency Public Communications
• IAEA Report on Preparedness and Response for a Nuclear or Radiological Emergency in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plant published

Designation of IAEA Response and Assistance Network (RANET) Capacity Building Centre in Fukushima

• Fukushima Prefecture, May 2013
• To coordinate several training activities related to nuclear and radiological emergency preparedness and response
• Workshop May 2013, 40 experts from 18 countries
IAEA Report on Strengthening Nuclear Regulatory Effectiveness

IAEA Published a report based on the outcomes of the:

- Ottawa Conference,
- 2nd Extraordinary CNS Meeting
- “Stress Tests” results
- IRRS Findings since Accident

Conclusions:

- Regulators as driving force for continuous safety improvements
- IAEA peer reviews and Cooperation - IRRS key role
- Enduring safety culture
- More comprehensive regulatory framework
- Regulators enhance communication, transparency and sharing

Report available [here](#)
Nuclear Safety Action Plan areas of work

Safety Assessments
IAEA Peer Reviews
Emergency Preparedness and Response
4. National Regulatory Bodies
Operating Organizations
IAEA Safety Standards

International Legal Framework
Member States Embarking on Nuclear Power
Capacity Building
Protection from Ionizing Radiation
Communication
1Research & Development
Strengthen IAEA peer reviews

IEM’s: IAEA Safety Standards and peer reviews play an essential role in supporting MS
Increase request for Peer Reviews since NSAP

Enhance Transparency
Reports on the results of peer reviews carried out in the past ten years have been shared by making them available on the Agency’s website with consent of Member States.

OSART Upgrade
- Established in 1982.
- 175th OSART mission during 2013.
- OSART guidelines on SAM revised in consultation with MSs
- First Corporate OSART Organization (October 2013)

IRRS Upgrade
- Additional module to record regulators response to Fukushima with Short and long-term measures introduced
- Revised guidelines on preparation and conduct of IRRS
- Revised IRRS module on EPR. Self-Assessment enhanced
- Basic IRRS Training (BIT) course for reviewers (First, Oct-2013)
Strengthen IAEA peer reviews

**EPREV Upgrade**
- Enhancement of the process and tools & guidelines revision
- Training for potential EPREV team members carried out.
- Transparency: unless requested mission reports declassified after 90 days

**INIR Upgrade**
- Updated INIR Guidelines incorporating lessons from previous missions and Fukushima Accident
- An evaluation methodology and guidance for INIR Phase III has been developed

**Site and External Events Design (SEED)**
- SEED review service has replaced the Site Safety Review Service,
- incorporating improvements to better address site selection, hazard assessment and the design of structures, systems and components.
- Importance for Countries embarking or expanding nuclear programme

**SEED and DSARS request from Member States not as expected**
Nuclear Safety Action Plan areas of work

- Safety Assessments
- IAEA Peer Reviews
- Emergency Preparedness and Response
- 4. National Regulatory Bodies
- Operating Organizations
- IAEA Safety Standards
- International Legal Framework
- Member States Embarking on Nuclear Power
- Capacity Building
- Protection from Ionizing Radiation
- Communication
- Research & Development
IAEA-WANO Memorandum of Understanding *(Sep 2012)*
signed at the 56th Regular Session of the General Conference:

- Coordinate the timing of OSART and WANO peer reviews
- Support each other’s peer review teams
- Cooperate on the respective performance indicator programmes
- Exchange information and support in the event of an NPP or fuel cycle facility accident

**IAEA-WANO workshop on operating experience at NPPs** *(Sep 2013)*
To enhance cooperation and exchange of information

**Nuclear Operating Organization Cooperation Forum** *(Sep 2012)*
Sharing experience safety related aspects during NPP construction

**IAEA-FORATOM Management Systems Workshop - Journey to Excellence in a Changing Environment** *(November 2013)*
to promote a sustainable management system and IAEA SS

**Flexible (non-baseload) Operation Approaches for Nuclear Power Plants**
Nuclear Safety Action Plan areas of work

- Safety Assessments
- IAEA Peer Reviews
- Emergency Preparedness and Response
- 4. National Regulatory Bodies
- Operating Organizations
- IAEA Safety Standards
- International Legal Framework
- Member States Embarking on Nuclear Power
- Capacity Building
- Protection from Ionizing Radiation
- Communication
- Research & Development
Review and strengthen IAEA Safety Standards

Safety Standards Review Task Force established
Systematic review of Safety Standards in light of Fukushima Accident:

- Safety Assessment for Facilities and Activities (GSR Part 4);
- Governmental, Legal and Regulatory Framework for Safety (GSR Part 1);
- Site Evaluation for Nuclear Installations (NS-R-3);
- Safety of Nuclear Power Plants: Design (SSR-2/1); and
- Safety of Nuclear Power Plants: Commissioning and Operation (SSR-2/2).

Chair of the Commission on Safety Standards Reported on the review (Nov 2012)

- No significant areas of weakness had been identified.
- Revisions were proposed to strengthen Requirements (through addenda)

Draft addenda approved by Safety Standards Committees (June - July 2013) Final review expected in June 2014, review and approval by CSS expected in November 2014. Revisions planned for submission to the Board of Governors in March 2015
Review and strengthen IAEA Safety Standards

Draft Safety Requirements submitted to Safety Standards Committees for approval to be sent to Member States:

- Preparedness and Response for a Nuclear or Radiological Emergency GS-R-2;
- The Management System for Facilities and Activities GS-R-3.

Safety Guides identified for a pilot review:

- *Design of the Reactor Coolant System and Associated Systems in NPPs (NS-G-1.9)*
- *Design of Reactor Containment Systems for NPPs (NS-G-1.10)*
- *Severe Accident Management Programmes for NPPs (NS-G-2.15)*

- *Establishing the Safety Infrastructure for a Nuclear Power Programme (No. SSG-16)* was reviewed in October 2013 in the light of the changes proposed to the relevant Safety Requirements and proposals for changes to supplement the existing publication as an addendum were made.
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**IAEA Fukushima Report:**
Assessment of the accident that is technically comprehensive, factual and balanced, addressing the causes and consequences as well as lessons learned.
IAEA will prepare a report on the Fukushima Daiiichi accident, to be finalized in 2014.
Fukushima Report

IAEA plays the leading role in producing a technically comprehensive report based on the understanding of the facts and Agency’s assessment of the accident.

The Report will consist of:

• **Summary report:**
  Informative and easily understandable for decision makers and the general public

• **Scientific/technical section:**
  ✓ includes in an understandable balanced manner, nuclear safety and radiological aspects focusing on scientific/technical data;
  ✓ provides a description of the accident, its causes and consequences and address relevant key issues;
  ✓ will be authoritative, factual and balanced with sufficient technical depth but easily understandable.
International Technical Advisory Group (ITAG)

• To advice and review the formulation and finalization of the report, particularly its technical/scientific aspects and accuracy of its content, including preparation of a draft outline of the report.

• Composed of FAO, ICRP, ILO, INSAG, OECD/NEA, UNSCEAR, WANO and WMO experts.

• Led by the Chairman of INSAG, Mr Richard Meserve.

Target Audience

• Member States; Regulators; Designers; Operators; Stakeholders and General Public.
Global Perspective

Approximately **180 experts** from over 40 Member States and various international organizations (including IAEA staff)
Working Groups

5 Working Groups

1. Description and Context of the Accident
2. Safety Assessments
3. Emergency Preparedness and Response
4. Radiological Consequences
5. Post-Accident Recovery
Working Groups and International Technical Advisory Group (ITAG)

Working Group:

1st meeting – March 2013:
- Topics defined and tasks distributed to the experts according to their expertise;

2nd meeting – June 2013:
- draft table of contents developed;

3rd meeting – September/October 2013:
- extended outline developed and information gaps identified;

4th meeting – December 2013:
- initial raw draft sections produced;

5th meeting – February 2014:
- overlaps between the chapters and repetitions minimized;

6th meeting – April/May 2014:
- To prepare the master file approved by the Co-Chairs.
International Technical Advisory Group (ITAG)

1\textsuperscript{st} ITAG meeting – March 2013:
• guidelines and methodology to be applied for the preparation of the Report provided;

2\textsuperscript{nd} ITAG meeting and 1st Joint ITAG/Co-Chairs meeting – June 2013:
• draft table of contents reviewed and comments provided;

2\textsuperscript{nd} Joint meeting of ITAG and Co-Chairs – December 2013:
• key technical aspects of each Chapter discussed and drafting progress positively appraised;

3\textsuperscript{rd} Joint ITAG/Co-Chairs meeting – May 2014:
• To review and discuss mature drafts of the Chapters.
Consultancy meetings and visits to Japan

- Source term
- Human and organizational factors and safety culture
- Remediation
- Radiological protection
- Decommissioning
- Regulatory activities and operating experience
- Meetings with Reconstruction Agency and Team in Charge of Assisting the lives of Disaster Victims
- Meetings with Institute of Energy Economics of Japan
Progress made:

- Significant progress has been made on all parts of the Report;
- Consultancy meetings in Japan and Vienna have provided much more information and a clearer understanding of the topics;
- All conclusions will be based on facts from reliable sources;
- IAEA Safety Standards series were recognized as a valuable tool for the preparation of the Report;
- Information must be updated as much as possible before the finalization of the Report.
Conclusion and Future Challenges

• How to keep the “Momentum on Nuclear Safety”

• With the implementation of the NSAP, Member States have systematically been more informed and actively involved in strengthening the Nuclear Safety framework;

• The Fukushima Report is on track to be finalized by the end of 2014 and many lessons learned will be disseminated for further strengthening nuclear safety worldwide

• Continue to make significant progress in implementing the Action Plan . . . but more work still to be done!
Thank you!