

International Experts' Meeting on
*Severe Accident Management in the Light of the Accident
at the Fukushima Daiichi Nuclear Power Plant*
17-20 March 2014

**IAEA Activities Under the Nuclear
Safety Action Plan**

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Special Coordinator for the Implementation of the Action Plan

Introduction: Nuclear Safety Action Team



IAEA response to Fukushima Daii-chi accident includes:

Nuclear Safety Action Plan:

- Defines a programme of work to strengthen the global nuclear safety framework
- Covers all relevant aspects relating to nuclear safety, emergency preparedness and response, and radiation protection of people and the environment as well as the relevant international legal 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.

Introduction: Nuclear Safety Action Team

Nuclear Safety Action Plan (NSAP):

Twelve key actions



1. Safety Assessments



2. IAEA Peer Reviews



3. Emergency Preparedness and Response



4. National Regulatory Bodies



5. Operating Organizations



6. IAEA Safety Standards



7. International Legal Framework



8. Member States Embarking on Nuclear Power



9. Capacity Building



10. Protection from Ionizing Radiation



11. Communication



12. Research & Development

IEM's

Background: International Expert Meetings'

Action 11: Communication

Enhance transparency and effectiveness of communication and improve dissemination of information



International Expert Meetings'

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

Background: International Expert Meetings'

Action 11: Communication

International Experts' Meetings (IEM's)

IEM 1:

IEM 2:

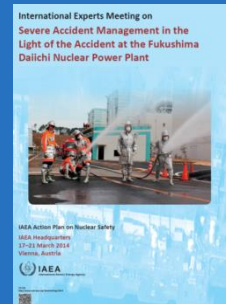
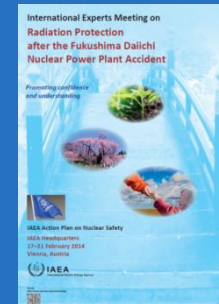
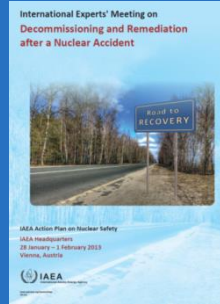
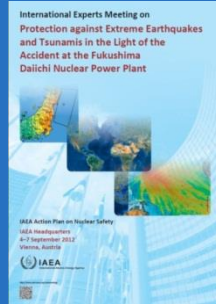
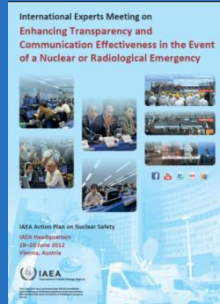
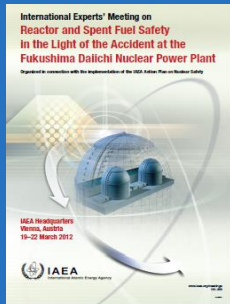
IEM 3:

IEM 4:

IEM 5:

IEM 6:

IEM 7:



Reactor and
Spent Fuel
Safety

March 2012

[link](#)

Transparency &
Communication

June 2012

[link](#)

Protection
Against
External
Events

Sept 2012

[link](#)

Decommissioning
and Remediation

January 2013

[link](#)

Human &
Organizational
Factors

May 2013

Radiation
protection

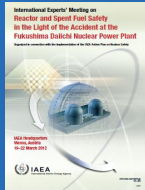
February 2014

Severe
accident
management

March 2014

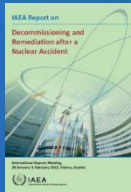
IEM 8: Research and Development - Q1 2015

Previous IEM's conclusions with regard to Severe Accident Management



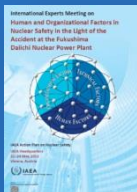
IEM 1 - Reactor and Spent Fuel Safety

Highlighted need for enhancing mitigation capabilities to complement accident prevention features of NPPs, including updating and strengthening the SAMGs, training, drills, exercise programmes



IEM 4 - Decommissioning and remediation

Summarized key lessons learned in the area of decommissioning, remediation and waste management following a severe accident



IEM 5 – Human and Organizational Factors

Highlighted the organizational relationships, clear roles, responsibilities in decision making are essential to ensure effective severe accident management strategies



IEM 6 - Radiation Protection

Analysed radiological impacts after a severe accident to people and environment and preparations for managing long term consequences

Nuclear Safety Action Plan

Activities on Severe Accident Management

Severe Accident Management as a key area:

- IAEA 1st Fact-Finding Mission of the Fukushima Accident (May 2011)
Conclusions and lessons learned in the area of Severe accident management
- INSAG Recommendation (Jul 2011)
“The event reinforces the need for defense against severe accidents by reducing the likelihood of such events, by preparing the plants to respond without significant damage, and by limiting the consequences of a severe accident if one should occur.”
- Fukushima Ministerial Conference (Dec 2012)
Highlighted importance of strengthening Severe accident management strategies and SAMG’s.



International Experts' Meeting on
Severe Accident Management

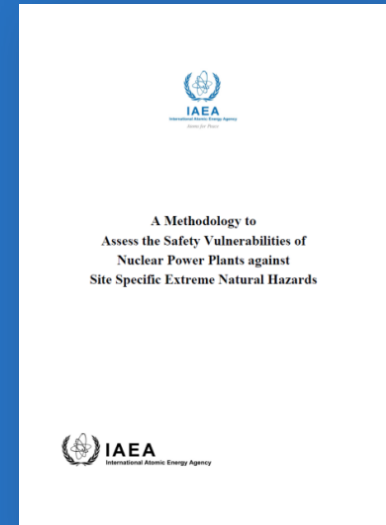
*Severe Accident Management related
activities within the IAEA Nuclear Safety
Action Plan*

Nuclear Safety Action Plan

Activities on Severe Accident Management

1) Methodology to Assess the Safety Vulnerabilities of Nuclear Power Plants against Site Specific Extreme Natural Hazards *(November 2011)*

- Includes assessment of the adequacy and robustness of the accident management programme under extreme events (Document Available [online](#))



2) Mission to review Japan's process for assessing nuclear safety at the Nation's nuclear power plants *(January 2012)*

- Severe Accident Management reviewed
- Provisions for mitigation of severe accidents should be comprehensively addressed
- Require licensees to develop comprehensive accident management programmes (Final Report available [online](#))



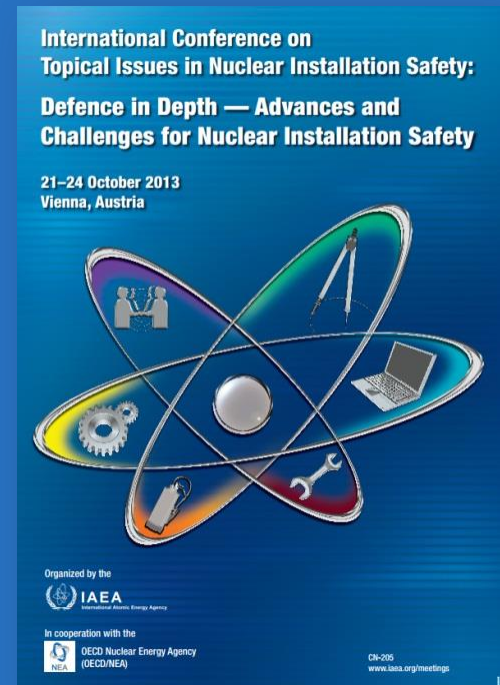
Nuclear Safety Action Plan

Activities on Severe Accident Management

3) IAEA International Conference on Topical Issues in Nuclear Installation Safety (21-24 October 2013)

One of the key issues: Advances and challenges in the implementation of Defence in Depth (DID) in accident management and emergency preparedness and response:

- Procedures and training
- Strategy for accident management
- Severe accident management
- Equipment for accident management
- Emergency preparedness and response (EPR) at facility level
- EPR at local and national level



Programme and presentations [here](#)

Nuclear Safety Action Plan

Activities on Severe Accident Management

4) Other technical documents

- **EPR Publications-** *Actions to Protect the Public in an Emergency due to Severe Conditions at a Light Water Reactor (published, September 2013)*

Under development:

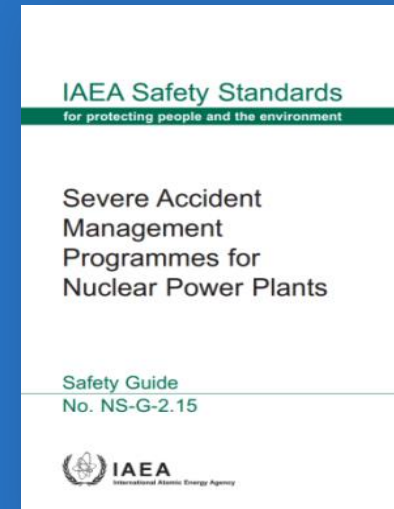
- *Source Term Evaluation and Consequence Analysis for Severe Accidents*
- *Accident Monitoring Systems for Nuclear Power Plants (NPPs)*
- *Reliable Containment Cooling and Filtered Venting (RCCFV).*

Nuclear Safety Action Plan

Activities on Severe Accident Management

5) Review/revision of the IAEA Safety Guide NS-G-2.15 on Severe Accident Management Programmes for NPPs

- Reviewed against proposed changes to IAEA Safety Requirements
- Strengthen the Guide and extend guidance on areas such as long-term cooling, containment integrity, and additional guidance for extreme natural events at multi-unit sites



6) OSART peer review service

- New Severe accident management module
- OSART workshop on severe accident management in September 2013

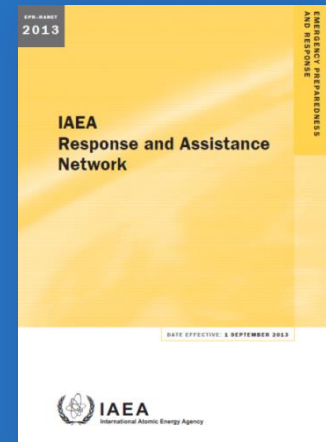


Nuclear Safety Action Plan

Activities on Severe Accident Management

7) RANET additional functional area on Severe Accident Management

The addition of a new Functional Area to address on-site assistance and advice following emergencies at nuclear installations



8) Symptom-based accident management toolkit (SAMT)

Development of a symptom-based accident management toolkit (SAMT) for NPPs for use by Member States.

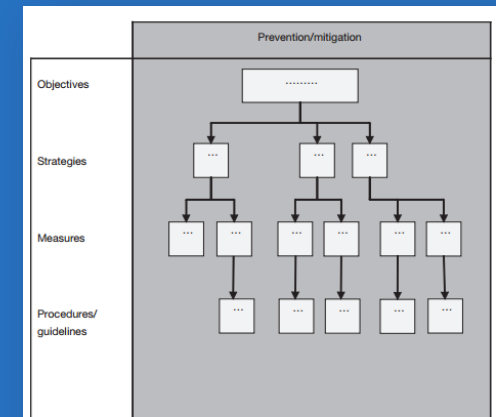


FIG. 1. The top-down approach to accident management.

International Experts' Meeting on Severe Accident Management

Nuclear Safety Action Team

*Areas covering Severe Accident
Management within the IAEA Fukushima
report*

IAEA Fukushima Report

5 Working Groups

IEM7



1. Description and Context of the Accident



2. Safety Assessments



3. Emergency Preparedness and Response



4. Radiological Consequences



5. Post-Accident Recovery

IAEA Fukushima Report

Working Group 2

Safety assessment (why did the accident happen?)

Areas:

- Assessment of the plant in relation to external events;
- Assessment of the design features and plant design basis;
- Assessment of the treatment of beyond design basis events;
- Defence in depth;
- Human and organizational factors and safety culture;
- Application of operating experience to improve plant design and operation.

IAEA Fukushima Report

Working Group 3

Emergency preparedness and response

Areas:

- EPR framework in Japan;
- Japan's response to the emergency:
 - Managing emergency response operations;
 - Onsite mitigation actions;
 - Protecting emergency workers and helpers;
 - Managing contaminated waste during the emergency;
- Providing information, instructions and warnings to the public;
- International response to the emergency.

Conclusions

Nuclear Safety Action Plan:

- Continue to make significant progress in implementing the Action Plan
- IAEA will continue reporting to the IAEA Board of Governors and General Conference
- The Convention on Nuclear Safety will provide many inputs from Contracting Parties regarding the national implementation of the NSAP
- But more work still to be done...

IAEA Fukushima Report:

The Report is on track to be finalized by the end of 2014:

- March 2015 → Report to the Board of Governors;
- September 2015 → Dissemination during the General Conference;
- LESSONS LEARNED for further strengthening nuclear and radiation safety and emergency preparedness and response worldwide



Thank you!

Nuclear Safety Action Team