ASEAN NPSR
2017 Benchmark Problem Assessment
Introduction

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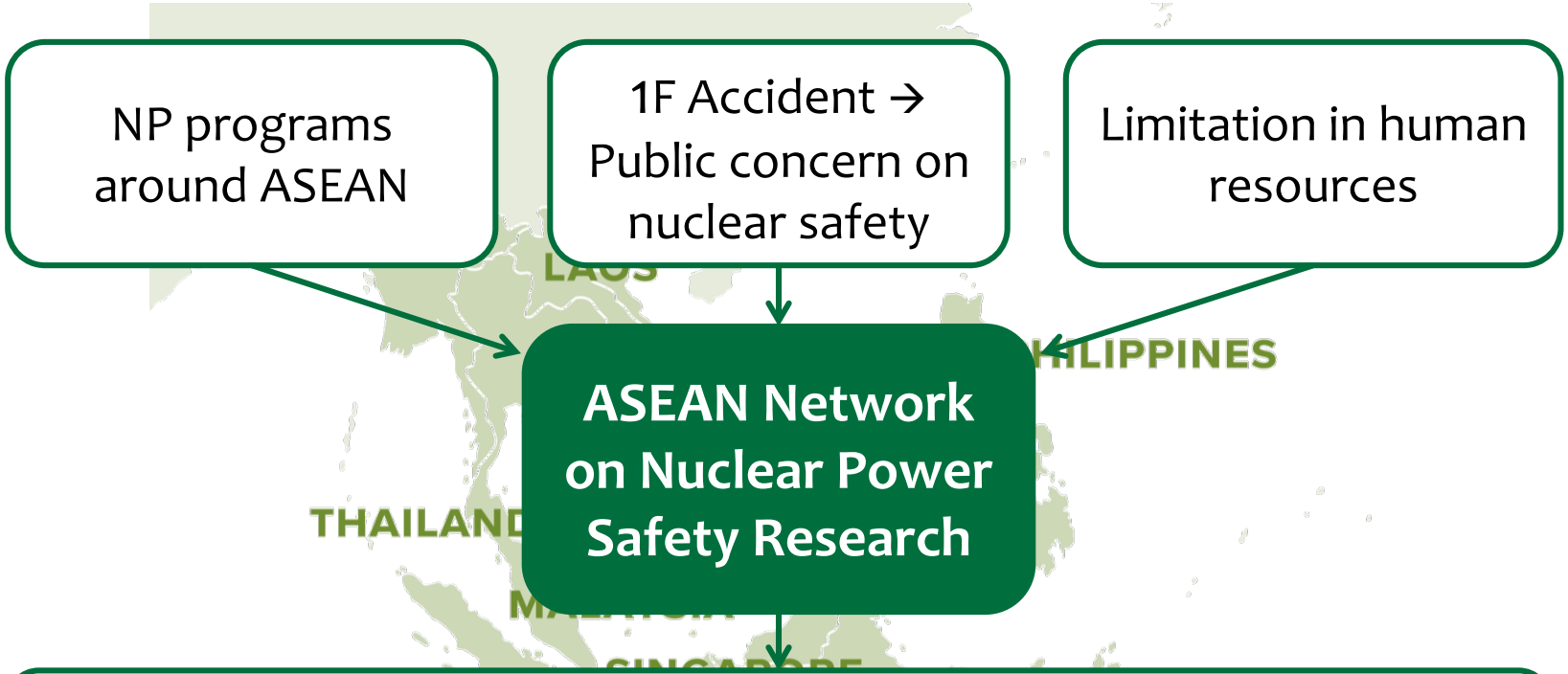

GOAL: To strengthen ***R&D, HRD and regional cooperation*** in the field of nuclear power safety in ASEAN in order to support formulation of ***regional strategy for accident management*** and to be consistent with ***IAEA Safety Standards***

ASEAN NPSR: Objectives & Scope

OBJECTIVES

- To be the regional platform to promote ***data and information sharing and cooperation***
- To ***fulfil needs and address gaps*** in ASEAN region in R&D
- To strengthen ***capability in R&D*** in order to be able to provide the technical support for decision making
- To establish and enhance the ***cooperation between ASEAN network and IAEA*** and other relevant international organizations

SCOPE

- Design basis accident analysis
- Severe accident analysis
- Probabilistic risk assessment
- Fission product transport
- ***Accident consequence assessment***
- Linkage between reactor assessments and environment impact assessment
- Other topics agreed upon by the Member States

2017 Benchmark Problem

2017 Benchmark Problem

ASEAN NPSR Activities

INFO & KNOWLEDGE SHARING	BENCHMARK PROBLEM ASSESSMENT	RESEARCH COLLABORATION	ANNUAL MEETING

Assessment of ***atmospheric dispersion*** of a radioactive release from a hypothetical severe accident in ***existing or planned NPPs around ASEAN***

- Proposed and led by Thailand

Implementation
What Have Been Agreed Upon

- Participants: Singapore, Thailand, Vietnam
- Proactive observers : Malaysia, the Philippines
- Observers: Lao PDR, Myanmar
- Project meeting
  - Once in 1-3 months (online)
  - File sharing on online system
- Progress
  - Determination of ***Calculation Conditions***
  - ***Comparison of codes (models)*** using constant wind scenario
  - ***Preliminary atmospheric dispersion calculation results*** for two NPPs near the region

Conditions
NPP2(Jan 18)

- Release characteristics
  - Location: 21°40'15"N, 108°33'30"E
  - Release amount
    - I-131: 1 x 10^{16} Bq (short-term consequences)
    - Cs-137: 6 x 10^{13} Bq (long-term consequences)
  - Release starting time: January 18, 2018 at 07:00 (UTC)
  - Release period: 26 hours
  - Release height: 10 meters
  - Heat content: 500 kW
- Weather data specification
  - Coverage: 6.5-32.0°N, 95.5-122.5°E
  - Resolution: 0.5° x 0.5°
  - Nesting scheme: Not specified

Conditions
NPP2(Nov 24)

- Release characteristics
  - Location: 21°40'15"N, 108°33'30"E
  - Release amount
    - I-131: 1 x 10^{16} Bq (short-term consequences)
    - Cs-137: 6 x 10^{13} Bq (long-term consequences)
  - Release starting time: November 24, 2018 at 16:00 (UTC)
  - Release period: 26 hours
  - Release height: 10 meters
  - Heat content: 500 kW
- Weather data specification
  - Coverage: 6.5-32.0°N, 95.5-122.5°E
  - Resolution: 0.5° x 0.5°
  - Nesting scheme: Not specified

Conditions
NPP1(Jan 30)

- Release characteristics
  - Location: 11°24'48"N, 108°58'29"E
  - Release amount
    - I-131: 1 x 10^{16} Bq (short-term consequences)
    - Cs-137: 6 x 10^{13} Bq (long-term consequences)
  - Release starting time: January 30, 2018 at 16:00 (UTC)
  - Release period: 26 hours
  - Release height: 10 meters
  - Heat content: 500 kW
- Weather data specification
  - Coverage: 6.5-32.0°N, 95.5-122.5°E
  - Resolution: 0.5° x 0.5°
  - Nesting scheme: Not specified

Conditions
All Cases

- Results to be compared
  - Distribution maps of the following values at 1 day from the release starting time
    - (Time-integrated) air concentration (Bq/m^3)
    - (Time-integrated) ground concentration (Bq/m^2)
    - Time-integrated exposure dose in terms of TEDE (μSv)
  - 1-day TEDE exposure extent (*defined as the furthest distance to which the specified TEDE is extended to*) for 1 μSv
  - Maximum air concentration (Bq/m^3), ground concentration (Bq/m^2), exposure dose in terms of TEDE (μSv) at 1 day from the release starting time at 10 / 100 km

Enhancing ASEAN Research Competency in Nuclear Power EPR

- TC Project Conceptual Proposal was not accepted.
- Thailand submitted a Proposal: *Enhancing ASEAN Research Competency in Nuclear Power EPR* to ASEAN Science, Technology and Innovation Fund (ASTIF) for funding during 2019.
- ASEAN Committee of Science and Technology ***(ASEAN COST) decided to financially support the project***;
  - Provided that the project must include great proportion of R&D activities.
- Funding for the 2017 Benchmark Problem is secured.

Feedback from the 4th TSO Conference

- TSO Conference recognizes ***emergency preparedness and response (EPR)*** as one of the important areas that Technical Support Organizations (TSOs) can play an important role.
- Some issues when consider EPR, e.g. ***transboundary characteristics***, has to be considered regionally.
  - ASEAN NPSR's 2017 benchmark problem is a good technical approach to tackle this regional issue.
- ASEAN NPSR has very similar objectives with the ***European TSO Network (ETSON) Research Group***.


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