EU ”Stress tests” in the light of Fukushima

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Background

Time Schedule

Scope

2011-06-16
Security class: None (C1)

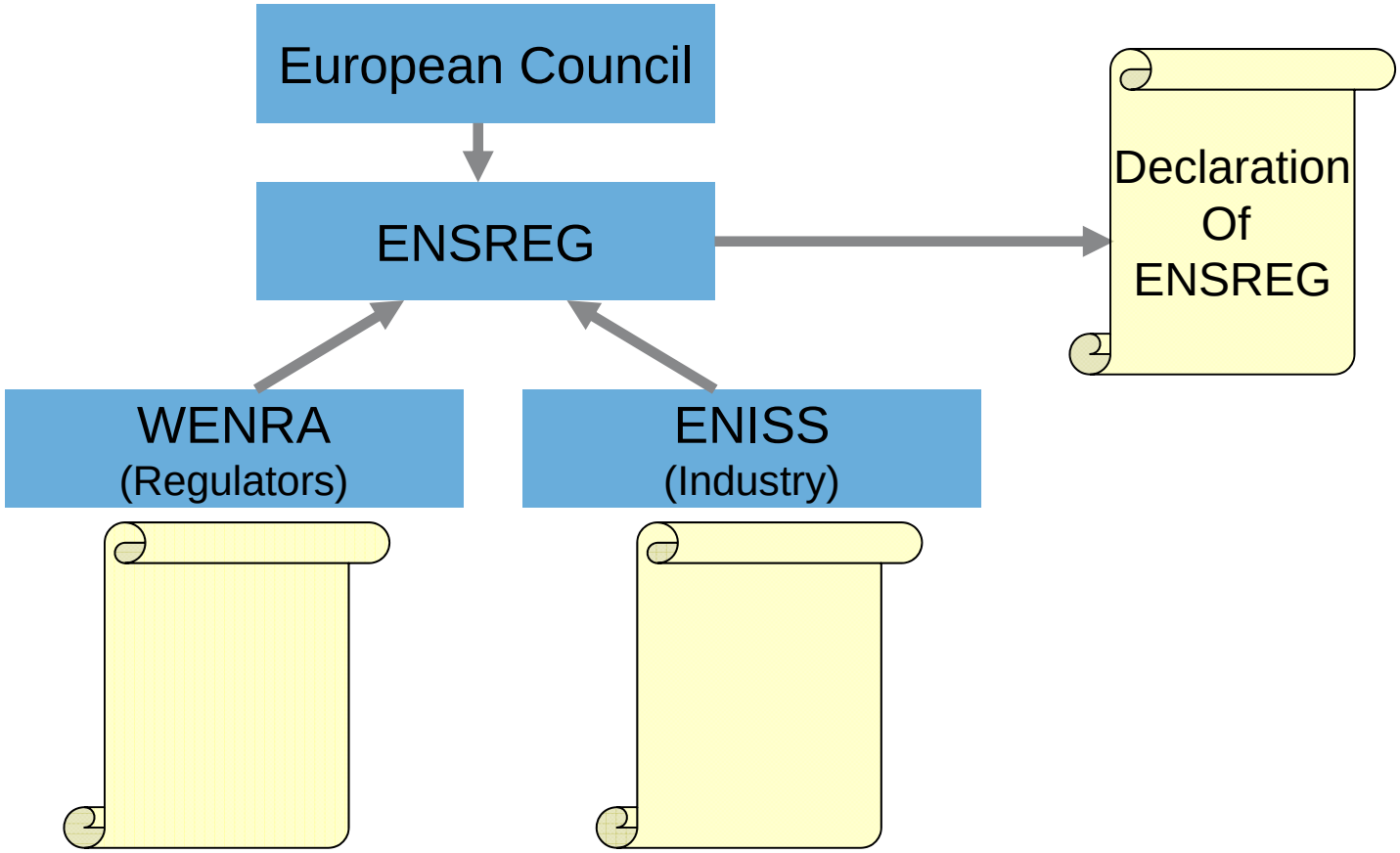
Safety and risk assessments: milestones

- 15 March: Commissioner Oettinger announces stress tests of nuclear facilities in the EU
- 21 March: Energy Council (energy ministers from MS) endorses the Commission proposal to carry out comprehensive safety and risk assessments
- 24-25 March: European Council (Heads of State and Government) calls on the Commission and the European Nuclear Safety Regulators' Group (ENSREG) to develop the scope and modalities of the assessments
- 24 May: the Commission and ENSREG reach agreement on the methodology and the timetable

Directorate-General for Energy

EUROPEAN COMMISSION

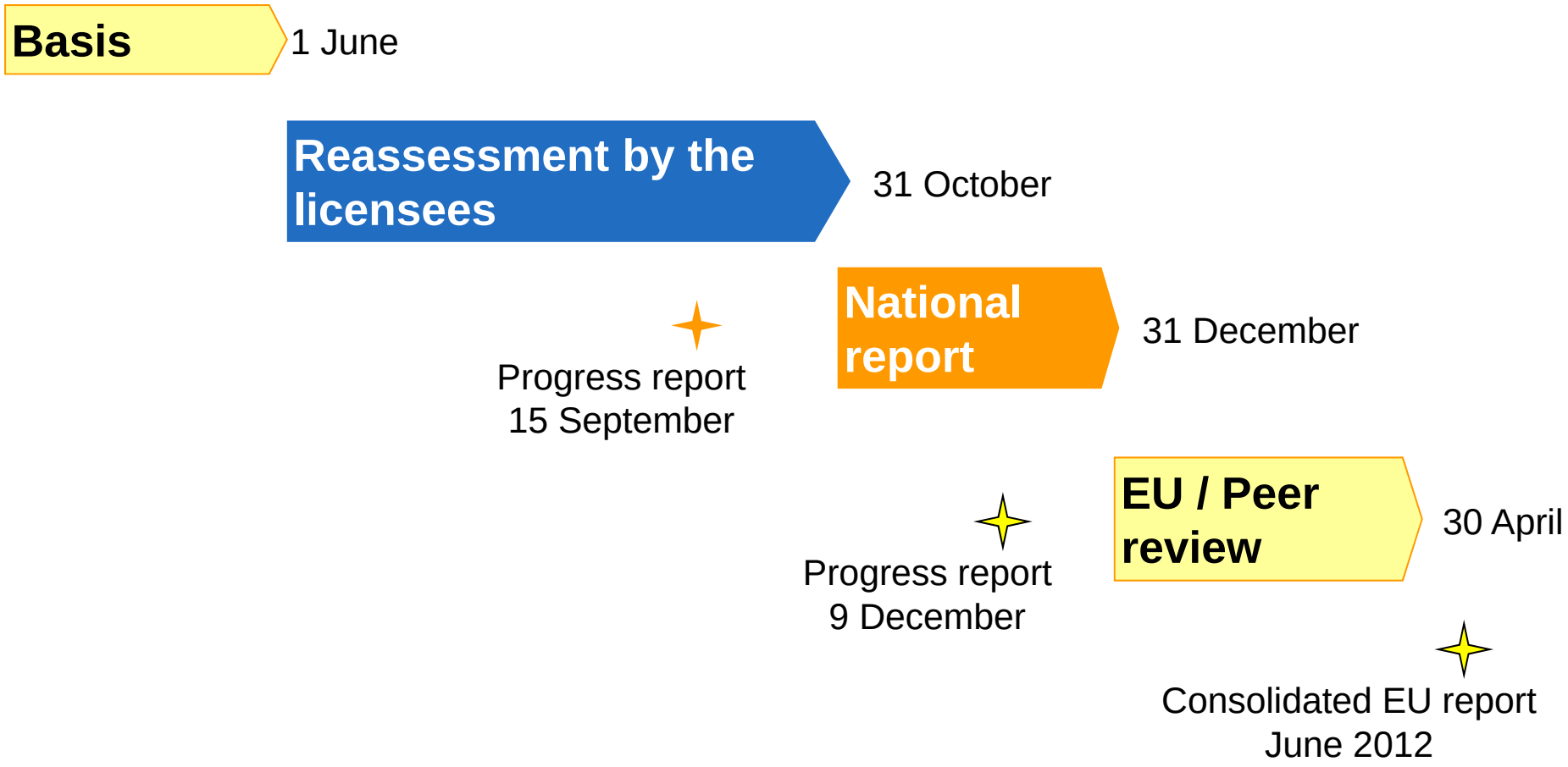
Background



Fundamentals expressed by ENSREG

- Reassessment of the safety margins in the light of Fukushima performed by the licensees
- To enhance credibility of the process the national reports should be subject to peer review. The result will be made public.
- National regulators shall be guided by the principle of openness and transparency
- Results of the review should be discussed both in national and European public seminars

Over all Time Schedule



Technical scope

Initial events	1. Earthquake 2. Flooding
Consequence of Loss of SF function	1. Loss of electrical power including station blackout (SBO) 2. Loss of ultimate heat sink 3 Combination of both
Severe accident management	1 Means to protect from and manage loss of core cooling 2. Means to protect from and manage cooling in the fuel pool 3. Means to protect and manage loss of containment integrity

Earthquake, Flooding and combination of both

Design basis

Mostly describing the present situation

1. Level of the plants design basis
2. Provisions to protect the plant
3. Plant compliance

Evaluation of the margins

Using available information and engineering judgment

1. The range above which loss of safety function, severe damage to the fuel or loss or containment is unavoidable

2. Indicate weak points, specify cliff edge effects

3. Indicate provisions that can be envisaged to prevent cliff edge effects or increase robustness

Loss of electrical power and loss of the ultimate heat sink

Design basis

Describe present design

Loss of safety functions

1a Loss of off-site Power (LOOP)
1b + loss of ordinary back-up source
1c + loss of any diverse source

2a Loss of primary ultimate heat sink, i.e. access to water
2b + loss of the alternate heat sink

3 Loss of primary ultimate heat sink with station blackout

Evaluate time frames
indicate provisions that can be envisaged

Severe accident management

Describe the accident management measures currently in place

Loss of core cooling	- Before fuel damage - After fuel damage - After failure of the reactor pressure vessel (or tubes PWR)
After fuel damage	- prevention of H2 deflagration/detonation - prevention of over-pressurization - prevention of re-criticality - prevention of basemat melt through - need for supply of electrical power and compressed air
Loss of containment function	- Measures for mitigation of the consequences
Loss of fuel pool cooling	- Before/after losing adequate shielding against radiation - Before/after uncover of the top of fuel in the pool - Before after fuel degradation

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Sources for further reading

- ENSREG
  www.ensreg.org (Here you find the “Declaration of ENSREG”)
- WENRA
  www.wenra.org
- ENEF
  http://ec.europa.eu/energy/nuclear/forum/forum_en.htm
- FORATOM
  www.foratom.org
- ENISS
  www.foratom.org/eniss