# Severe Accident Management Guidelines & Emergency Preparedness Planning - Not One without the Other

IAEA - IEM7 on Severe Accident Management in the Light of the Accident at Fukushima NPP
Vienna 2014-03-17--20

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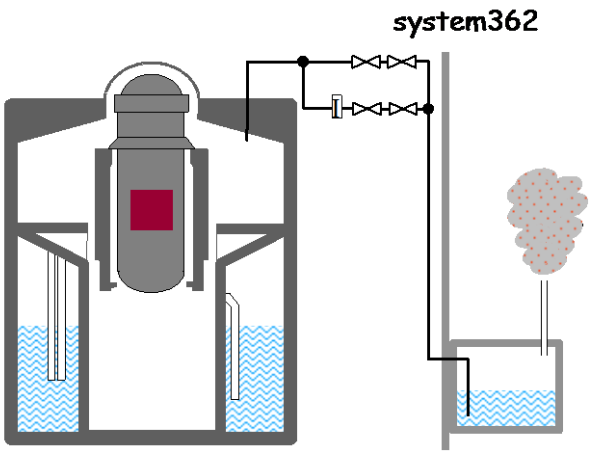
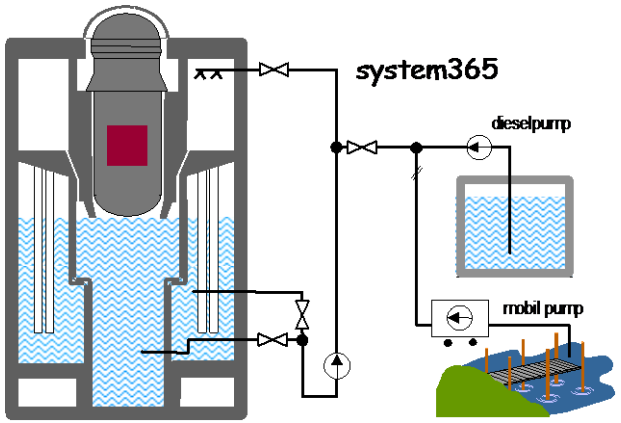
# General Planning Aspects

- Core damage is not desirable!
  - Priority 1 = Avoid severe core damage
  - Assure adequate core cooling
- But in some cases it may be unavoidable
  (for example due to an extended Station Blackout (SBO))
  - Priority 2 = Mitigate the consequences
  - Keep the damaged core cooled
  - Use filtered venting

**Filtered venting**
- in case of slow pressurization




**Water filled containment**
- cooling the core (whether inside/outside reactor vessel





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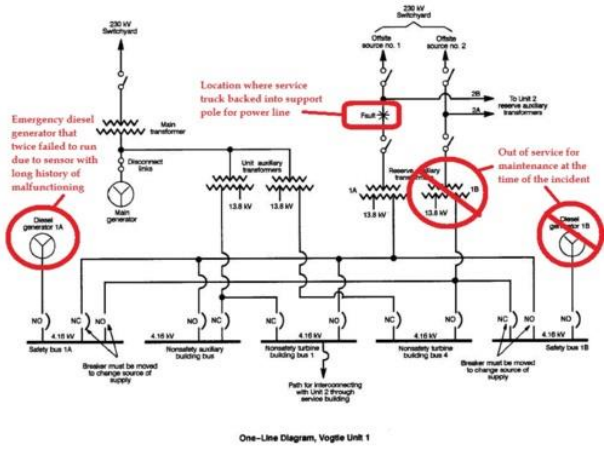
# Planning Background

We have to cope with dire situations at all reactor units in parallell




<u>Two different scenarios:</u>

Station Black Out

- No warning given
- No external support within 72 h

Slowly developing situation

- Warning some day in advance
- For example severe weather
- The site isolated 24 h when the situation actually occurs





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# Mobile Equipment

- Due to our vulnerability to SBO we have strenghten the use of diesel fueled mobile equipment
  - Pumps
  - Heater & coolers
  - Lighting masts
  - Generators
- Equipment stored on/close to the site

(Diversified system for core cooling installed later ~ year 2020)





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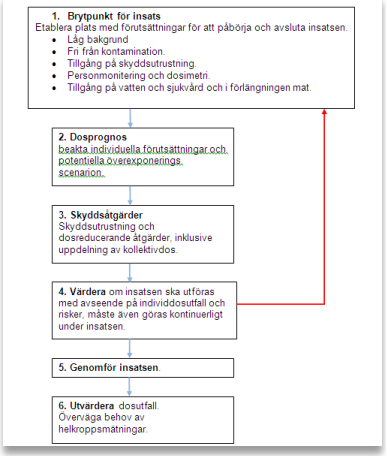
# SAMG & EPP

- Strategy for the use of the mobile equipment
  - Priorities
  - Well defined and prepared connection points
  - Well defined and prepared procedures




- Emergency plans to actuate the use
  - Well defined and prepared decision-making
  - First responders at site ready to handle the equipment - **immediately**
  - Adequate personal safety procedures in place - **immediately**





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# Maintain & train!

- The equipment will not maintain itself
- Maintenance & testing programs requires documentation and procedures för mobile solutions.
  (Comparable to ordinary safety systems)
- The personal will not maintain their competence & skill without regular drills & proper training
- Continuous improvement through exercises







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# What if - The whole site area is contaminated!

- No ”normal” routines/procedures will work
- ”Plan B” procedures much exist , for example:
  - Protective equipment supply
  - Dosimetry, including internal intakes
  - Exchange of personal working at site
  - Mobile laboratory for radiological samples

- Could be facilitated by the setting up of a Logistic Center at some distance from the site
(compare J-village near Fukushima)





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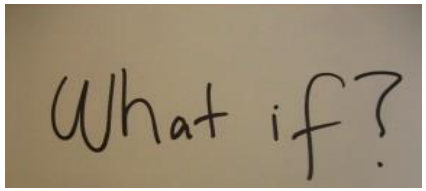
# In summary

- Use a helicopter view to see the whole picture
- All plans shall be robust and as simple as possible
- Perform regular drills & excercises
  - Table top excercises to check for compliance
  - Realistic practical drills
  - Cover the whole chain
- Frequently ask yourself





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