Office for Nuclear Regulation

UK Updated National Action Plan – Presentation to ENSREG Workshop

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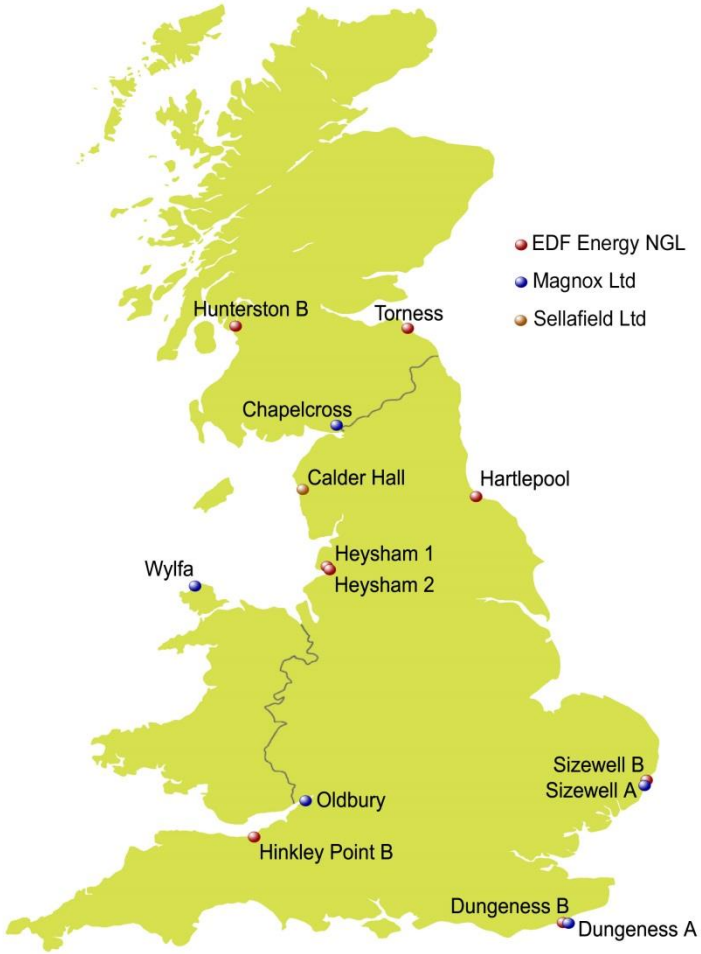
Construction of the UK National Action Plan (UK NAcP)

The updated NAcP (December 2014) used the same structure as the original UK NAcP and was constructed using:

- The ENSREG compilation of recommendations and suggestions document
- The ENSREG Peer Reviews of Stress Tests
- ONR Chief Inspector Interim, Final and Implementation reports
- ONR UK NPP Stress Test Report
- Licensee Updates

UK NPP Sites



Aside from Wylfa all Magnox stations either defuelling or decommissioning

All EDF sites operational AGRs with the exception of the Sizewell B PWR

Baseline Data for UK Updated NAcP

ONR obtained data from licensees via:

- Technical, topic specific meetings
- Weekly update teleconferences
- Monthly project overview meetings
- Technical reports aligned to ONR recommendations and findings

Overview of Updated UK NAcP

The updated UK NAcP is structured around the suggested topics from the CNS 2nd extraordinary meeting and the ENSREG Action Plan following the Peer Review of the Stress Tests, namely:

Section 1:

Topic 1 – External Events
Topic 2 – Design Issues
Topic 3 – Severe Accident Management and Recovery (On-site)

Overview of Updated UK NAcP

Section 2

- Topic 4 – National Organisations
- Topic 5 – Emergency Preparedness and Response and Post-accident Management (Off-site)
- Topic 6 – International Co-operation

Section 3

- Additional activities derived from national reviews (not covered by ENSREG or CNS considerations)

Overview of Updated UK NAcP

Section 4

- Timescales and Milestones (tabular form)

  Within the sections updates to cover the UK National Stress Test report and the ENSREG and Country Specific Peer Review for UK Stress Test Report are included.

Philosophy of Approach

The approach taken to obtaining a resilient response took on 3 distinct phases:

- Equipment procurement – having the basic early capability
- Tie ins – adding to the current arrangements for installing back up equipment to provide additional capability on site
- Maintenance, Procedures and Training – culminating in the availability, appropriate usage and adequate demonstration of equipment

Status of Work (Magnox)

- Magnox has closed out it's work in response to events at Fukushima (December 2013)
- A close out report has been produced and published on it's website
- ONR has assessed the case for close out of the work and judged this to be adequate

http://www.onr.org.uk/pars/2014/magnox-14-012.pdf

Status of Work (Magnox) – BDB Compound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Fire Equipment and Water Supplies

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Back Up Generation

Transmission of Reactor Parameters

New Fire Fighting and Clearance Vehicles

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Boiler Feed Pump (Wylfa)

Alternative Pond Filling Lines (Oldbury and Sizewell A)

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Alternative Communications

Desk Based Studies

- Review of vulnerability of plant to external hazards - flood, extreme temperatures, earthquake (including seismically induced fire etc.)
- Limited scope L2 PSA complete for Wylfa
- Updated SBERGs and SAGs plus the introduction of new Accident Management Guidelines for the site already in defuelling/decommissioning phases

Status of Work (EDF Energy)

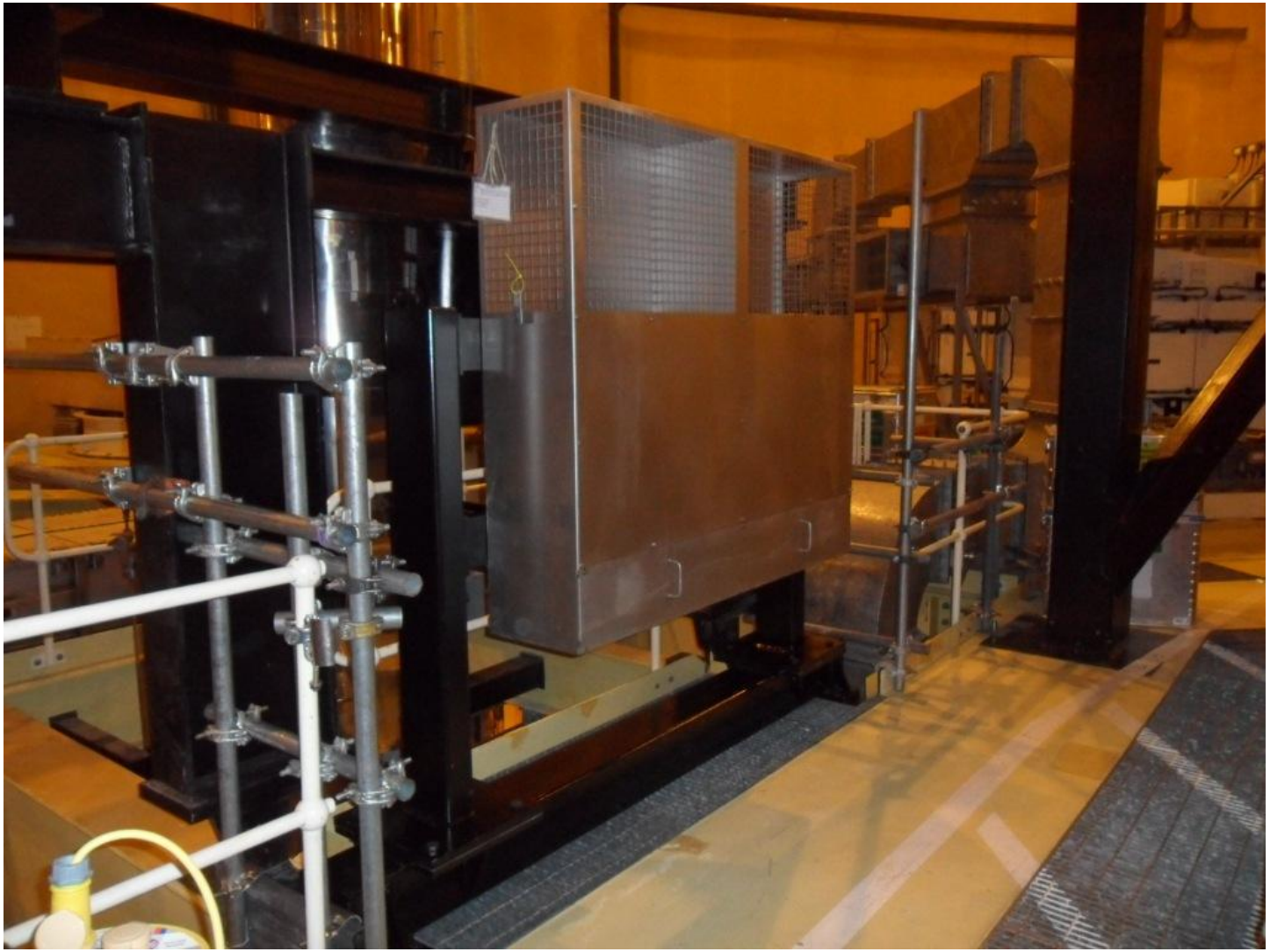
- EDF Energy has produced a close out report and published this on it's website
- ONR has recently completed an assessment of the close out report against it's recommendations and stress test findings and judges the report to be adequate. This will be published shortly on the ONR website
- EDF Energy has committed to carry out further work in "normal business" that includes work tied to plant outages, on-going programmes of training and emergency exercise demonstrations. ONR will monitor this work using established processes between ONR and EDF Energy

High Pressure Pump (Boiler Feed)

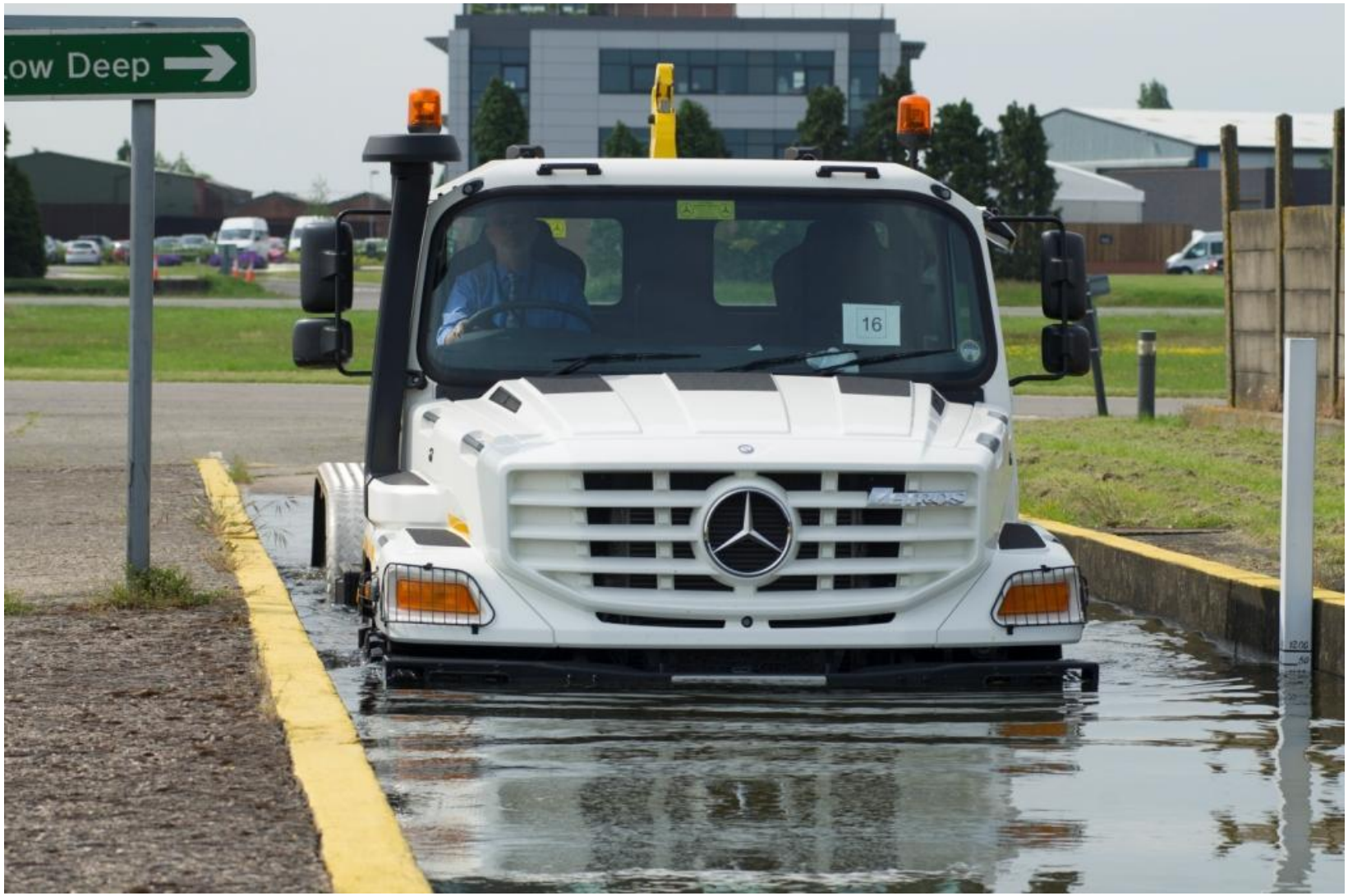
High Pressure SG Feed

Qualified Low Voltage Tie-Ins

PARs



6x6 Off road Vehicles



General Debris Removal Equipment

Flood Protection

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Emergency Response Centres


JCB
JCB

“Pods” deployed from regional depots

Desk Based Studies

- Review of vulnerability of plant to external hazards (flood, extreme temperatures, earthquake including seismically induced fire etc.), confirmation of margins and absence of cliff-edge effects
- L2 PSA complete for Hunterston B – roll out of learning to other sites within normal business
- Updated SBERGs and SAGs and DBUEG (Deployable Back Up Equipment Guidelines)
- Resilience review of sites to loss of grid for extended periods
- Feasibility study for installation of FCV

EDF Energy's "normal business" work

EDF Energy has committed to on-going work as part of it's normal business. This includes:

- A programme of emergency exercises that demonstrates the equipment described above in Fukushima type simulations
- On going training on use of equipment and deployment in addition to the pre-existing emergency exercise programme
- Commissioning and demonstration of CEMS (Continuous Emergency Monitoring System) in 2015
- Consideration and implementation (where appropriate) of OpEx that continues to emerge from Fukushima
- ONR will monitor this work using established processes between ONR and EDF Energy

CEMS (Continuous Emergency Monitoring System)

- System allows plant parameters in the time taken for deployable equipment to arrive at site and become operational
- Parameters include T_1 and T_2 temperatures, reactor pressure, boiler outlet temperature or pressure and flow information
- System operated on battery power (or station supplies if available); consistent with the limited autonomy time required
- Designed to work in combination with back up equipment that is capable of recording plant data (wireless) and transmitting this offsite

Good Practices

- Large Volumes of Contaminated Water
  - Use of military experience
  - 10,000 m^3 “bags”
  - Stored at Back Up Equipment depots
- Management of Traumatic and Psychological Stress
  - Introduction of a trauma management pilot scheme and a range of related policies, procedures and training courses
  - CESC Emergency Leader Briefing Pack, which contains a series of checklists on Resilience and Supporting People in Emergencies

Good Practices

- Multi-unit Exercise
  - Demonstrated interaction of sites to respond to Fukushima type event over an approximate 12 hour period
  - Relocation of ECC
  - Jumped forward in time to test Human Factors aspects
  - Desk based exercise (BUE demonstrated at three other exercises in 2014)
  - Allowed comparisons between site team response

Openness and Transparency

All reports to date are available on the ONR website:

- Chief Inspector Interim Report

www.hse.gov.uk/nuclear/fukushima/interim-report.pdf

- Chief Inspector Final Report

www.hse.gov.uk/nuclear/fukushima/final-report.pdf

- UK Stress Test Report

www.hse.gov.uk/nuclear/fukushima/stress-tests.pdf

- Chief Inspector Interim Report

http://www.hse.gov.uk/nuclear/fukushima/implementation-report-oct-2012.pdf

- UK National Action Plan

www.hse.gov.uk/nuclear/fukushima/ensreg-report.pdf

- Updated UK National Action Plan

http://news.onr.org.uk/2014/12/uk-onr-ensreg-national-action-plan-december-2014/

Conclusions

- Licensees have provided responses to address the recommendations and findings from ONR's Fukushima report (www.hse.gov.uk/nuclear/fukushima/final-report.pdf)
- ONR judges that the licensees responses are adequate to close out the recommendations and findings
- Some work will continue during 2015 and in some cases beyond as part of normal business
- ONR will continue to monitor this work as part the established processes between ONR and EDF Energy