WELCOME
Nuclear New Build

Hinkley Point C: Innovation in Knowledge Management

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EDF Energy

• We employ nearly 14,000 people
• We generate around 20 - 25% of UK’s electricity
• We are the country’s largest producer of low carbon electricity
• We operate eight nuclear power stations plus wind farms, gas, and coal
• We plan to build four new nuclear reactors:
  - 2 at Hinkley Point in Somerset
  - 2 at Sizewell in Suffolk
Hinkley Point C
HPC Progress

• To Date
  - Development Consent Order granted in 2013
  - Electricity Market Reform: the Energy Act achieved Royal Assent
  - Project will benefit from UK Guarantees Scheme
  - New Chinese and French partners identified
  - Industrial Relations agreements achieved with main trade unions
  - Design Reference Configuration established

• Next
  - Final Agreements with Investors and UK Government
  - FID (Final Investment Decision)
Initial Site Construction - Archaeology
What is **Nuclear Knowledge Management?**
Nuclear Projects

- Complex projects!
- Covering the entire nuclear lifecycle from design, construction, commissioning, operations, and eventually decommissioning
- Long timescales:

  Construction + Operations + Decommissioning

  = Over 100 years of Knowledge to manage
Types of Knowledge

- **Explicit knowledge** is declared knowledge:
  - Easily captured and codified.
- **Implicit knowledge** is difficult to reveal, but possible to record:
  - Why things (such as the EPR design) are as they are.
- **Tacit knowledge** is the most difficult to store or transfer:
  - Individual’s knowledge of how they function within an organisation.
Properties of Knowledge

- Decays over time, what is the “half-life” of knowledge? ~20 years?
- Needs to be viewed as an asset
- Continuously increases over the entire lifecycle of the project

\[ K = f(\text{info, experience of use, application, context}) \]
Generation of Knowledge

- Essential to recognise the role of all organisations in the generation of knowledge that affects a nuclear facility over its lifecycle
  - Capture
  - Utilisation
  - Transfer
  - Retention
- Knowledge needs change over time but do not end when the construction of the facility is complete!
IAEA Knowledge Management Definition

• The IAEA defines KM as:

“An integrated, systematic approach to identifying, acquiring, transforming, developing, disseminating, using, and preserving knowledge, relevant to achieving specified objectives.”
We are generating knowledge now that we will need in the future.
NNB Knowledge Management Strategy

• Unique opportunity!
• Avoid consequences of losing design history “future proofing”
• NNB strives to be a learning organisation
• Capture knowledge from all lifecycle phases
• Innovative tools to compliment information and data capture
• Prevent personnel hoarding knowledge in their desk drawers (or garage)
• Accessible (and hopefully maintainable) repository
NNB KM Approach – things we need to do well

• Integrated and holistic approach:
  - Existing procedures must create and validate single source of truths
  - Configuration Management must be religiously adhered to
  - Organisational Learning is critical – NNB must be a Learning Organisation in all aspects
  - Asset Information Management – the key output
• OPEX and experience capture across the industry
• Training and Competency Assessment processes is critical to ensuring knowledge is maintained at required levels
Stakeholder and Supply Chain Involvement

• Many organisations will be involved in HPC across the facility lifecycle:
  - Government, regulators, design authority, responsible designer, suppliers, vendors, utilities, etc

• Let's work together:
  - Define what good Knowledge Management means across the nuclear industry and supply chain
  - Break down silos and share

• What can we learn?
Final Thoughts
Final Thoughts on Knowledge Management

• HPC is positioned to develop strong and sustainable knowledge management process that can be an example in the industry
  - Technology creates the opportunity to make this easier than ever before
• Work with our stakeholders and supply chain to define knowledge requirements
• Major cost/time savings if knowledge is captured and codified as it is created
  - Explicit instead of Implicit
THANK YOU