Horizon Nuclear Power

A Presentation to the Minerals Engineering Society

15 October 2010
Horizon Nuclear Power


- Land acquired at Oldbury-on-Severn and Wylfa (privately, and from NDA). Staggered development and construction programme with Wylfa commencing first

- Mission to develop around 6,000MW of new nuclear capacity by 2025. At least £15bn investment.

- Initial staff resources drawn from UK nuclear development projects of RWE and E.ON

- Plan for significant growth during 2010 - 2011

- Safety First culture
A UK company of E.ON and RWE

22 units in operation
6 units undergoing decommissioning and dismantling
### Leading in safety and performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Plant</th>
<th>kWh (world record)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>Unterweser</td>
<td>9.81 bn kWh</td>
</tr>
<tr>
<td>1981</td>
<td>Unterweser</td>
<td>9.54 bn kWh</td>
</tr>
<tr>
<td>1982</td>
<td>Biblis B</td>
<td>9.74 bn kWh</td>
</tr>
<tr>
<td>1983</td>
<td>Grafenrheinfeld</td>
<td>9.96 bn kWh</td>
</tr>
<tr>
<td>1984</td>
<td>Grafenrheinfeld</td>
<td>10.15 bn kWh</td>
</tr>
<tr>
<td>1985</td>
<td>Grohnde</td>
<td>11.48 bn kWh</td>
</tr>
<tr>
<td>1986</td>
<td>Grohnde</td>
<td>10.79 bn kWh</td>
</tr>
<tr>
<td>1987</td>
<td>Grohnde</td>
<td>10.21 bn kWh</td>
</tr>
<tr>
<td>1988</td>
<td>Palo Verde</td>
<td>10.86 bn kWh</td>
</tr>
<tr>
<td>1989</td>
<td>Grohnde</td>
<td>10.86 bn kWh</td>
</tr>
<tr>
<td>1990</td>
<td>Grohnde</td>
<td>10.69 bn kWh</td>
</tr>
<tr>
<td>1991</td>
<td>Emsland</td>
<td>10.83 bn kWh</td>
</tr>
<tr>
<td>1992</td>
<td>Brokdorf</td>
<td>11.33 bn kWh</td>
</tr>
<tr>
<td>1993</td>
<td>Unterweser</td>
<td>11.40 bn kWh</td>
</tr>
<tr>
<td>1994</td>
<td>Isar 2</td>
<td>11.13 bn kWh</td>
</tr>
<tr>
<td>1995</td>
<td>Grohnde</td>
<td>11.36 bn kWh</td>
</tr>
<tr>
<td>1996</td>
<td>Philippsburg 2</td>
<td>11.47 bn kWh</td>
</tr>
<tr>
<td>1997</td>
<td>Grohnde</td>
<td>12.53 bn kWh</td>
</tr>
<tr>
<td>1998</td>
<td>Grohnde</td>
<td>11.76 bn kWh</td>
</tr>
<tr>
<td>1999</td>
<td>Isar 2</td>
<td>12.27 bn kWh</td>
</tr>
<tr>
<td>2000</td>
<td>Isar 2</td>
<td>11.94 bn kWh</td>
</tr>
<tr>
<td>2001</td>
<td>Isar 2</td>
<td>12.40 bn kWh</td>
</tr>
<tr>
<td>2002</td>
<td>Isar 2</td>
<td>12.17 bn kWh</td>
</tr>
<tr>
<td>2003</td>
<td>Isar 2</td>
<td>12.32 bn kWh</td>
</tr>
<tr>
<td>2004</td>
<td>Isar 2</td>
<td>12.24 bn kWh</td>
</tr>
<tr>
<td>2005</td>
<td>Brokdorf</td>
<td>11.99 bn kWh</td>
</tr>
<tr>
<td>2006</td>
<td>Isar 2</td>
<td>12.44 bn kWh</td>
</tr>
<tr>
<td>2007</td>
<td>South Texas 1</td>
<td>12.36 bn kWh</td>
</tr>
<tr>
<td>2008</td>
<td>Chooz B1</td>
<td>12.84 bn kWh</td>
</tr>
</tbody>
</table>
A UK company of E.ON and RWE

- **Wylfa** - Anglesey, North Wales
  - Lead site
  - Adjoins existing power station (closes 2010)
  - Includes grid connection offer acquired by EDF, plus GCA acquired by RWE npower
  - Includes additional EDF owned land and RWE-owned land
  - Direct cooling feasible, potential for >3 GW

- **Oldbury-on-Severn Gloucestershire**
  - Lagging site
  - NDA land north of existing station site
  - NDA land in the Severn estuary, including tidal reservoir important for cooling (NB cooling towers also needed)
  - Grid connection agreement
  - Land purchased by EON, potential for c3GW
A phased approach

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Wylfa**
- Site development
- Planning, Licensing
- Construction
- Operation

**Oldbury**
- Site development
- Planning, Licensing
- Earthworks
- Construction

*First Generation before 2025*
Site progress

- EIA preparation/consent programme
- Site characterisation/studies programme
- Engagement with stakeholders
- Continual and ongoing engagement with local residents
- Working with statutory bodies

- Wylfa nomination site

- Oldbury nomination site
Technology Selection

- Formal procurement process underway. Technical, economic and logistical evaluation.
- Westinghouse’s 1200 MW AP1000 PWR and Areva’s 1700 MW EPR PWR
- Process will conclude in the first quarter of the new year.
Supply chain engagement

• Early Days
  – Building the organisation
  – Developing the projects at site
• Engaging at a national and regional level
  – Supplier drop-in days at Wylfa and Trawsfynydd in last year
  – Registrations of interest via www.horizonnuclearpower.com
• Graded approach:
  – Contracting party likely to be WEC or Areva
  – Direct relationship with Horizon where appropriate
• Quality is key, for conventional and nuclear supply chain
Recruitment activity

Required:
• Nuclear specialists – safety, licensing, radiological, design
• Project and site development engineers
• Legal & company secretariat support
• PAs / Admin staff
• Finance / Risk Management
• Learning & development
• Procurement and commercial staff
• Communications team

2010-2013:
• ~100 more general project management and project development staff
• 30-40 nuclear specialists for licensing and engineering of designs

2013 onwards:
• construction workforce on sites and mobilise operations staff
• HQ corporate functions will have long term presence at Valiant Court
Industry Skills - Challenge and Opportunity

- UK must retain and invest to remain a sustainable world class nuclear sector in the UK
- Collective industry effort needed for nuclear workforce planning against the backdrop of challenging demographic forecasts, including skills transfer
- UK New Build will create 1000’s of new job opportunities across the entire nuclear value chain (projects, licensing, safety, construction and operations)
- New blood (and possible returners) essential
- 2015 is a watershed year for nuclear skills
- Regional locations need local skills strategies and relationships with local communities and partner organisations
Industry Skills Challenge and Opportunity

Today
- 44,000 nuclear sector employees in the UK
- 24,000 employed directly by the nuclear operators
  - Decommissioning: 12,000
  - Generation: 7,500
  - Fuel processing: 4,500

Tomorrow
- Assuming 12GWe by 2025: 1000 new industry recruits pa, mostly graduates and apprentices
- 4,600 new jobs in generation sector alone (with further impact on supply chain)
- Age profile, retirement of plant, need for operational skills from 2017 onwards points to 2015 as key date for recruitment and training to be underway

Source: Cogent - ‘Power People. The Civil Nuclear Workforce’
The Challenge and the Opportunity

• Technically and commercially challenging projects to develop
• UK remains an important NNB market
• Early need for skills and education initiatives
• Need industrial confidence to invest in UK supply chain
• Still much work to be done on facilitative actions
• But the prize is huge. Each new station (3000 MW)
  – will cost around £8bn
  – will require up to 5000 construction staff
  – will create around 800 new jobs when operational
  – plus hundreds of additional jobs and supply chain benefits in the communities around each site
  – providing continuity of employment for a skilled nuclear workforce for around 60 years and opportunities for future generations to develop skills, through apprenticeships and access to skilled employment