AMEC plc
Opportunities in the nuclear sector
December 2013
AMEC in nuclear

- Strong position built over 60 years
  - Long term pedigree and strong market position in UK and Canada
  - High value consultancy, engineering and project management services
  - Long term relationships with customers and supply chain
  - Over 3,000 experienced nuclear employees
  - Leveraging AMEC’s non-nuclear capability
  - Growing organically and by acquisition

- Across the asset lifecycle
  - New build (UK, Canada, CEE, other)
  - Reactor support (UK, Canada, US, other)
  - Clean up (UK, CEE, US, other)

Key facts:
- 2012 revenue: £290m(1) – above average margins
- 36% share of Sellafield Parent Body (NMP)
- Low risk framework and consultancy model
- Two focused acquisitions in last 2 years
- Key customers include: EDF, Bruce Power, NDA, Sellafield, Magnox, Horizon, OPG, AWE, CEZ

Leading international nuclear capability

AMEC revenue H1 2013

- E&I 14%
- Clean Energy 24%
- Oil & Gas 50%
- Nuclear 7%(1)
- Mining 12%

E&I: Environment and Infrastructure, (1) Nuclear revenues exclude Sellafield contribution
The nuclear market
Energy market drivers

- Major political drivers in tension
  - Carbon, security, competitiveness

- Not just about Fukushima
  - North American shale gas
  - Global financial crises
  - East coming West

- Trilemma most acute in Europe
  - Austerity and weak balance sheets
  - Privatised industry, liberalised markets
  - Relatively low levels of energy security
  - Passionate and polarising politics of carbon reduction and affordability
  - Significant power investment needed

Dramatic shifts in politics of energy
The nuclear market
Nuclear will remain key part of global mix

- Politics driving different answers
  - Exit from nuclear in Germany
  - Growing European emphasis on life extension, major French programme
  - New build going ahead in UK, ME and Asia

- Not just about new build
  - Largest market is existing reactor support and plant life extension (PLEX)
  - Clean up market strong growth opportunity

- Multiple growth drivers
  - All three parts of life-cycle across all three AMEC geographies
  - Tailored service offering to each country
  - High barriers to entry

Multiple growth drivers for overall nuclear market and AMEC

Source: AREVA, IEA, AMEC estimates
AMEC’s position
Nuclear strategy

New build
- Establish AMEC as the utilities’ independent nuclear technology partner
- Assure the licensing, delivery and safe operation of the reactor and associated systems

Reactor support
- Defend and grow leading position as the independent nuclear expert for existing reactors in current geographies
- UK, Canada, Central & Eastern Europe

Clean up
- Establish AMEC as a major UK nuclear clean up contractor (Tier 1) and long term partner to Nuclear Decommissioning Authority (NDA)
- Pursue international growth priorities

Long term strategy with flexibility to meet short term customer needs
AMEC’s position
Successfully implementing our nuclear strategy

**New build**
- Partnered with OPG in Canada as the Owner’s Engineer
- Partnered with EDF and Horizon in the UK
- Partnered with Cernavoda in Romania as the Owner’s Engineer
- Contract with Belarusian Government, support for reactor purchase negotiations
- Pursuing Owner’s Engineer positions across CEE
- Support to ENEC in the UAE
- Support to US NRC on an Evaluation Model for the Next Generation Nuclear Plant
- Support to UK ONR on reactor generic design assessments (non-EPR)

**Reactor support**
- Largest technical consultant in support of OPG and Bruce Power in Canada
- AMEC comprised over 80% of the integrated team Project Management Team for Bruce Units 1 and 2 Refurbishment
- Largest supplier of engineering and technical services to EDF’s current UK reactor fleet
- Positioned with EDF as a key programme & Project Management partner (prime contract)
- Extending our support services across a broader European footprint (eg support to existing reactor at Cernavoda, Romania)
- Support across a number of US reactor sites

**Clean up**
- NMP (36% shareholder), strong partnership relationship with NDA
- Sellafield’s largest technical services framework consultant
- 5 year contract with utility CEZ (Czech) for the management of active waste at their nuclear power plant in Dukovany
- Support to DoE in the USA
- Contracts through EBRD for ‘Project Management Units’ at Chernobyl and Ignalina (Lithuania)
- Working on site at Fukushima in support of the Japanese recovery programme
- Partnered with Rolls Royce and Atkins for the NDA Magnox PBO bid

Strongly positioned across the lifecycle
AMEC’s position
Long and deep nuclear pedigree

Over 60 years in nuclear AMEC:
- is technology independent
- has experience on all reactor types
- has developed long term partnerships

Track record a key differentiator for high barrier international markets
AMEC’s growth opportunities
Reactor support and plant life extensions (PLEX)

Maintaining and extending the life of the existing fleet

- Significant number of reactors to be supported and extended (UK/Canada/US/other)
- 14 existing AGR reactors in UK will typically have a 7 year life extension
- France ‘Grand Carenage’ upgrade and life extensions to 58 reactors of the French fleet

AMEC services

- Lifetime support
- Operational performance
- Reactor servicing
- PLEX services
- Regulatory support to the utilities

Number of operating reactor units by age

Over 30% of the world’s reactors are more than 25 years old

eg: France ‘Grand Carenage’ +€25bn over 5 years: potential accessible market for AMEC of up to 5%
AMEC’s growth opportunities
Clean up

Completing the life cycle

- Driven by regulatory requirements
- UK and North America have the most developed clean up sector

AMEC services

- Decommissioning
- Waste management
- Parenting clean-up missions and transformational change (PBO style of NDA contracts)
- Environmental
- Radiological
- Technology solutions

Anticipated reactor closure dates

More than 250 reactors worldwide may close by 2030

* Represents Tier 2/3 opportunity. Tier 1 (PBO) role is in addition to this figure
Starting the life cycle

- Asian countries will dominate new builds (China forecast 38% of total)
- Asian OEMs exporting technology into the west
- UK, CEE, Middle East programmes
- Replacement of existing capacity and building new

AMEC services

- Owner’s engineer
- Independent technology advisor
- Regulatory compliance advisor
- Programme and Project Management, Design Engineering and Consultant

* Approx. number of global reactors

<table>
<thead>
<tr>
<th>Year</th>
<th>Global annual capacity (GWs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>435</td>
</tr>
<tr>
<td>2020</td>
<td>480</td>
</tr>
<tr>
<td>2025</td>
<td>520</td>
</tr>
<tr>
<td>2030</td>
<td>550</td>
</tr>
</tbody>
</table>

* Based on typical 1GW reactor size – all data from WNO and WEO 2013 New Policy Forecast. Total number of reactors also allows for replacement of retired reactors

eg: UK new build cost of £16bn for 2 reactors: potential accessible market for AMEC of c.5%

Significant global new build
Multiple growth drivers for AMEC’s nuclear business

- Maintain and develop a strong position, and mix of work, across the asset life cycle
- Develop long-term partnerships with customers and global suppliers
- Maintain and grow technical knowledge, grow talent, capabilities, experience
- Focus on high value consultancy, engineering and project management services
- Continue growing existing strong positions in UK and Canada
- Develop broader international business
- Maximise benefits of group scale and collaboration

Nuclear represents an attractive long term growth opportunity
AMEC’s position in nuclear

- Support through the life cycle of asset creation, operation and decommissioning
- Committed to supporting Global Nuclear New Build programmes
- Knowledgeable and technology independent, with....
- 60 years’ experience covering all major reactor technologies
- Experienced in establishing and operating an integrated supply chain
- Genuine desire to work in partnership

Long term relationship building supports growth
AMEC’s position in nuclear
Global capability

- More than 3,000 qualified and experienced nuclear employees
  - Offices in the UK, US, Canada, France, Slovakia, Czech Republic, Romania and South Africa
  - Operations in Lithuania, Ukraine, Belarus and Russia and contracts in many other countries including Japan
  - Working with both regulators and utilities, experienced in multiple regulatory environments

Industry leading laboratory capability, e.g., >25yrs of testing and data on in-reactor materials performance
- Structural Integrity
- Materials and corrosion
- Chemical and Radiological Analysis
- Prototype system and equipment development
- Concrete testing
- Waste treatment process development
AMEC’s position in nuclear
Why customers choose us

We bring
- Design knowledge
- Breadth of experience
- Regulatory environment
- Operational experience
- Unique IAEA/SNETP experience

Utilities
- Nuclear: Nuclear pedigree
  - Programme management
  - Technology knowledge
  - Regulatory environment
  - Design knowledge
  - Local capability
  - Non-nuclear: + nuclear infrastructure O&M

Vendors
- Technology knowledge
- Local delivery
- Risk mitigation
- Supply chain knowledge
- Project management capability

Regulators

Proven delivery in long term partnerships
AMEC’s position in nuclear
Global customers
AMEC’s position in nuclear
Reactor support highlights

- **UK**
  - Largest provider of engineering and technical support to EDF UK fleet
  - Prime Contract support to EDF’s Asset Investment Programme
  - Partner in operation of the Sellafield Site
  - Partner with Rolls Royce (RR) and BAE Systems (BAES) for support to UK naval nuclear programme

- **Canada**
  - Preferred provider of engineering, operational and safety support for Bruce Power and OPG fleets
  - Support to New Brunswick Power

- **US**
  - Independent Spent Fuel Storage Installations (ISFSI)
  - Tritium Leaks from piping and underground enclosures
  - Materials Engineering for Plant Modifications
  - Post-Fukushima seismic and flooding hazard analysis

- **International**
  - Operational support to reactors in Romania, South Africa, Russia, Czech Republic, Slovakia, France, US, China and Korea

Supporting our customers to meet market demand
AMEC’s position in nuclear
Decommissioning experience increasingly important

- Planning for decommissioning and site remediation is an essential part of the nuclear new build process
  - Influencing design
  - Influencing construction
  - Influencing operations
  - A part of the licensing process

- AMEC has the capability to support planning and preparation for decommissioning and clean up by leveraging expertise in every part of the decommissioning process
  - OE and architect engineer positions for new build
  - Decommissioning and new build of support facilities or parts of plant during operations
  - Decommissioning and site remediation once operations have ceased

Industry-leading international experience across the decommissioning life cycle
AMEC’s position in nuclear Competitors

<table>
<thead>
<tr>
<th>Competitor</th>
<th>Reactor support</th>
<th>Clean up</th>
<th>New build</th>
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<tbody>
<tr>
<td>AMEC</td>
<td>★</td>
<td>★</td>
<td>★</td>
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<tr>
<td>Cavendish (formerly Babcock)</td>
<td>★</td>
<td>★</td>
<td>★</td>
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<tr>
<td>Bechtel</td>
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<td>CH2MILL</td>
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<td>Doosan Babcock</td>
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<td>Jacobs</td>
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<tr>
<td>Atkins</td>
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This analysis is indicative and is not intended to represent the entirety of the market and AMEC’s position.

AMEC supporting customers across the asset lifecycle
AMEC’s nuclear capability
Supporting the life cycle of complex assets

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<tr>
<th>Consulting / Technical Services</th>
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<tr>
<td>Renewable Energy</td>
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<tr>
<td>Specialist Safety</td>
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<tr>
<td>Reactor Physics / Criticality</td>
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<tr>
<td>Environmental</td>
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<tr>
<td>Radiological</td>
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<tr>
<td>Planning Applications</td>
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<tr>
<td>Civil/Structural/Seismic</td>
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<tr>
<td>Architecture</td>
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<tr>
<td>Welding and Materials</td>
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<td>Chemistry and Corrosion</td>
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<td>Radiochemical Analysis</td>
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<tr>
<td>Remote Operations</td>
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<tr>
<td>Waste Management</td>
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<td>Waste and Repository</td>
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<tr>
<td>Waste Technology</td>
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<tr>
<td>Geotechnical Analysis</td>
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<td>Climate Change</td>
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<td>Water and Air Quality</td>
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<td>Water Management</td>
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<td>Process / Tech Safety</td>
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<tr>
<td>Mechanical / HVAC</td>
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<td>Piping / Stress Analysis</td>
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<td>Electrical (inc HV trans)</td>
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<td>Control &amp; Instruments</td>
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<td>Civil &amp; Structural</td>
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<td>Construction embedded</td>
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<td>Adv Structural Analysis</td>
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<td>CAD – 2D and 3D (PDMS)</td>
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<td>Safety Case</td>
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<td>Tender Prep / Evaluation</td>
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<td>Ground Investigation</td>
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<td>Topographical Surveys</td>
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<td>Value Engineering</td>
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<td>Fire Protection</td>
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<th>Design</th>
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<td>CDM Services</td>
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<td>Technical Assurance</td>
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<td>Quality Assurance</td>
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<td>Environmental Support</td>
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<td>Construction Management</td>
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<td>Site Supervision</td>
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<td>Procurement</td>
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<td>Financing</td>
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<td>Factory Acceptance Tests</td>
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<td>New Build</td>
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<td>Plant Modification</td>
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<td>Development and Test Services</td>
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<td>Management of plant shutdowns</td>
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<td>Offshore Services</td>
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<tr>
<th>Deliver</th>
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<tr>
<td>Asset Management &amp; improvement and optimisation</td>
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<tr>
<td>Life Extension and Reactor Servicing</td>
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<td>Safety Analysis (PSR, PRA/PSA)</td>
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<td>Decommissioning/Clean Up</td>
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<td>Process Analytical Services</td>
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<td>Decontamination</td>
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<td>Licensing</td>
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<td>Environmental Support</td>
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<td>Performance Guarantees</td>
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<td>Project Appraisal</td>
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<tr>
<td>Independent Peer Review</td>
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<tr>
<td>Independent Technical Assessment</td>
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<tr>
<td>Habitat Management</td>
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<tr>
<td>Landscaping</td>
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<td>O&amp;M Contract</td>
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<tr>
<td>Training and Development</td>
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<tr>
<th>Support</th>
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<tbody>
<tr>
<td>Scheme &amp; Functional, Programme &amp; Project Management</td>
</tr>
<tr>
<td>Concept, Front End &amp; Detailed Design – global access through workshare to over 10,000+ Engineers and Scientists</td>
</tr>
<tr>
<td>Socio Economic studies, Training, Financial Modelling</td>
</tr>
<tr>
<td>Specialist Technical Support including Materials/Chemistry, General Engineering and Development Laboratories</td>
</tr>
<tr>
<td>Grid Connection</td>
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</table>
AMEC’s nuclear capability
Complemented by engineering and scientific services

GeoSciences
- Geotechnical
- Geology
- Seismology
- Hydrology
- Hydrogeology
- Meteorology

Materials Engineering
- Soils
- Concrete
- NDE for Metals
- Welding Engineering
- Forensics

Civil / Site
- Planning
- Site Design
- Grading / Drainage Plans
- Stormwater Management
- Utilities

Environmental Sciences
- NEPA SEPA
- Terrestrial Ecology
- Aquatic Ecology
- Wetlands
- Cultural Resources
- Natural Resources

Environmental Engineering
- Assessment
- Remediation
- Hazardous / Toxic / Radiological Materials
- Sediments

Construction
- Construction QA/QC
- Construction Monitoring
- Decontamination / Decommissioning / Demolition
- Remediation Construction

Water Resources
- Watershed Management
- Groundwater Modeling
- TMDL Studies
- Stream Restoration

Maximising group scale and collaboration
AMEC’s nuclear capability
Differentiated by our laboratory services

- Class leading health, safety and environmental performance record, 4 years incident free
- 600 staff majority PhD or first degree
- Specialises in
  - Chemistry & corrosion
  - Mechanical Testing – Test Rig build & operation
  - Remote Inspection and Operations
  - Radiochemical and Chemical analysis
  - Waste Technology and Management
  - Structural Integrity, materials, Engineering Simulation
  - Reactor Physics and Nuclear Facility Licensing/Regulator Support
  - Radiological and environmental

- Operates comprehensive (>4000m²) laboratory & engineering test rig facilities (active & non-active) in the UK and Slovakia. The largest commercially operated nuclear laboratories in the UK
- Operated radiochemical analysis laboratories on behalf of the UK Environment Agency and Sellafield
- Largest provider of R&D to EDF Energy in UK for continued operation and lifetime extension of UK fleet
- Largest commercial provider of radiochemical analysis in the UK including statutory radiochemical analysis monitoring around nuclear sites
- Programme leader for the European Community GEN IV Advanced Reactor Gas Fast Reactor project
- World leader in R&D for PWR materials corrosion via UK MoD nuclear submarine programme
- Technical adviser to the UK civil nuclear regulator ONR
- Acts as the Defence Nuclear Regulator for the UK MoD

Our facilities are a key differentiator and support our engineering services
UK new build sites

UK government approved 10 ‘new build’ sites

1. Bradwell, Essex, NDA sold to EDF Energy
2. Braystones, Cumbria, NDA sold to RWE npower
3. Hartlepool, Durham, EDF Energy
4. Heysham, Lancashire, EDF Energy
5. Hinkley Point, Somerset, NDA sold to EDF Energy
6. Kirksanton, Cumbria, NDA sold to RWE npower
7. Oldbury, Gloucestershire, NDA sold to Horizon*
8. Sellafield, Cumbria, NDA sold to Iberdrola/SSE/GDF-Suez
9. Sizewell, Suffolk, EDF Energy
10. Wylfa, Anglesey, sold by NDA to Horizon*

*Nuclear energy required to fill UK’s ‘energy gap’

*Hitachi ; Source: DECC
Indicative timeline for nuclear new build in UK

Subject to EU review of Strike Price and EDF FID
### Reactor Types

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>PWR</td>
<td>Pressurised Water Reactor</td>
</tr>
<tr>
<td>AP1000</td>
<td>Current Westinghouse PWR Design</td>
</tr>
<tr>
<td>EPR</td>
<td>AREVA design PWR</td>
</tr>
<tr>
<td>BWR</td>
<td>Boiling Water Reactor</td>
</tr>
<tr>
<td>ABWR</td>
<td>Advanced Boiling Water Reactor</td>
</tr>
<tr>
<td>ESBWR</td>
<td>Economic Simplified Boiling Water Reactor</td>
</tr>
<tr>
<td>AGR</td>
<td>Advanced Gas Cooled Reactor</td>
</tr>
<tr>
<td>RBMK</td>
<td>Early type Russian reactor, Light Water, Graphite</td>
</tr>
<tr>
<td>VVER</td>
<td>PWR Type of Russian Design</td>
</tr>
<tr>
<td>Candu</td>
<td>Canadian Deuterium Reactor</td>
</tr>
<tr>
<td>Fusion</td>
<td>Reactor technology based on nuclear fusion such as in a PWR</td>
</tr>
<tr>
<td>SMR</td>
<td>Small Modular Reactor</td>
</tr>
<tr>
<td>EFR</td>
<td>European Fast Reactor</td>
</tr>
<tr>
<td>Magnox</td>
<td>UK Designed gas reactor with Graphite Core, fuel clad in Magnesium alloy</td>
</tr>
<tr>
<td>HTR</td>
<td>Very High Temperature Reactor</td>
</tr>
<tr>
<td>PBMR</td>
<td>Pebble Bed Modular Reactor</td>
</tr>
<tr>
<td>GBR</td>
<td>Gas Breeder Reactor</td>
</tr>
<tr>
<td>UK-EPR</td>
<td>European Pressurised Water Reactor to be constructed in UK</td>
</tr>
<tr>
<td>LWR</td>
<td>Light Water Reactor</td>
</tr>
<tr>
<td>PHWR</td>
<td>Pressurised Heavy Water Reactor</td>
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### Other Abbreviations

<table>
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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>NNB</td>
<td>New Nuclear Build</td>
</tr>
<tr>
<td>NSS</td>
<td>Subsidiary of AMEC in Canada</td>
</tr>
<tr>
<td>OSS</td>
<td>Owners support services</td>
</tr>
<tr>
<td>OE</td>
<td>Owners Engineer</td>
</tr>
<tr>
<td>OPG</td>
<td>Ontario Power Group</td>
</tr>
<tr>
<td>IVC</td>
<td>Inspection Validation Centre</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operations &amp; Maintenance</td>
</tr>
<tr>
<td>NRC</td>
<td>Nuclear Regulatory Commission</td>
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<tr>
<td>GDA</td>
<td>Generic Design Assessment</td>
</tr>
<tr>
<td>ONR</td>
<td>UK Office of Nuclear Regulation</td>
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<tr>
<td>BOP</td>
<td>Balance of Plant</td>
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<tr>
<td>PBO</td>
<td>Parent Body Organisation</td>
</tr>
<tr>
<td>NDA</td>
<td>Nuclear Decommissioning Authority</td>
</tr>
<tr>
<td>SNETP</td>
<td>Sustainable Nuclear Energy Technology Platform (European Nuclear Fission)</td>
</tr>
<tr>
<td>PLEX</td>
<td>Plant Life Extension</td>
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</table>