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From The Times

January 11, 2008

New generation of nuclear reactors promises 'greener and safer' energy

Mark Henderson, Science Editor

Energy companies building the next generation of nuclear power stations will choose between four models, the manufacturers of which have already applied to have their designs approved for use in Britain.

The four reactor types were all accepted into a "prelicensing process" in July. This will assess their safety and efficiency before any orders are placed or sites chosen.

This year the Nuclear Installations Inspectorate, the Health and Safety Executive and the Environment Agency are expected to select three models to be examined in detail over the next three years. The successful candidates would then be awarded a generic design assessment certificate, allowing their construction provided that suitable sites are proposed.

The licensing and planning could be complete by about 2012, and the quickest practical construction time is generally considered to be about four years. John Hutton, the Business Secretary, said yesterday that he hoped the first new reactors would be generating electricity by 2018.

Each of the competing designs is safer and more environmentally friendly than Britain's present reactors. Whereas atomic plants now use safety systems that must be activated mechanically or electronically, their replacements will have passive safety features based on natural forces such as gravity or convection. This means that even in the event of a catastrophic failure the core where the nuclear reaction takes place cannot melt down or explode. If something goes seriously wrong, the nuclear reaction will cool itself and eventually stop of its own accord, rather than requiring intervention.

The new reactors also produce much less radioactive waste than their predecessors - about 10 per cent by most estimates.

The most advanced, and by consensus the safest, modern reactor is the AP1000 made by Westinghouse, a company sold to Toshiba in 2006 by the government-owned BNFL. It is a 1,150 megawatt pressurised water reactor that features an advanced passive cooling system based on convection, and uses control rods operated by gravity to stop fuel from melting. Its chief drawback is that, although the design is already licensed in the United States, it has yet to be built.

The second option under consideration is the European pressurised water reactor, developed by the French company Areva. This design is

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much more advanced than those of existing models – one feature is a “core catcher” based on gravity, to prevent a melt-down. At 1,600MW, it has the greatest generating capacity of the

WAYS TO GO GREEN



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