

## Briefing #9: Why nuclear must be shut down

***The two remaining nuclear power stations in Scotland can generate about a third of our electricity when in operation. Hunterston B and Torness are ageing, in bad shape and well past their planned retirement dates. This briefing explains why they pose a serious risk to public safety and why nuclear has no place in a sustainable energy policy.***

### **Problems with AGRs**

The Scottish nuclear reactors at Hunterston and Torness are both examples of what are known as Advanced Gas Cooled Reactors or AGRs. Designed in the 1960's, AGRs were built at seven sites around the UK between 1965 and 1988. Hunterston was connected to the grid in 1976 with a design life of 30 years. The reactors have had a consistently poor record. To achieve high-energy efficiency they were designed to operate with very high temperatures in the reactor core. This requires a very complicated reactor design. The thousands of graphite blocks that make up the reactor core are critical to reactor safety. However, the bolts that secure them are liable to corrode at the planned operating temperatures. As a result the reactors have always been run at lower than designed temperatures ensuring that efficiency is sub optimal.

The big selling point of AGRs was that they were designed for continuous operation. The idea was that the fuel rods and control rods that govern the rate of the nuclear reaction could be moved in and out of the reactor core while it remained in operation. Again this was never achieved. Expansion of the reactor core resulted in the channels for the fuel rods and control rods being distorted out of position. Consequently the necessary precision of fuel rod and control rod insertion/extraction was never achieved and after a series of serious fuel rod jamming incidents, on load refuelling was abandoned.

### **A disaster waiting to happen?**

However, the story of AGRs is not just about failure to achieve design objectives. Graphite, which makes up the reactor core, is a form of carbon. Subject to intense radiation it becomes brittle and prone to cracking. The longer the reactor is in operation the worse this becomes. Reactor 3 at Hunterston is currently offline because it's estimated that there are 377 cracks in the reactor core. Reactor 4 has an estimated 209 cracks and has been allowed to run for 4 months up to December



2019. To put this in context there are 3000 graphite blocks in each reactor. The latest report from the ONR (Office for Nuclear Regulation) warns that the cores are disintegrating with 58 fragments so far identified. This has huge implications for safety.

Hunterston B is 42 years old. It was originally designed to operate for a maximum of 30 or 35 years and it is running beyond the original design safety limits. With the ongoing crumbling of the reactor core. A sudden outage, steam surge or earth tremor could result in a serious accident and a large release of radioactive gas. If other safety systems were to fail – and they are untested – there is a possibility of a catastrophic accident on the scale of Chernobyl. The direction of the prevailing wind would take the radioactive plume across Glasgow, Edinburgh and most of the central belt.

**[This briefing updated 18<sup>th</sup> October 2019]**

## Torness

Torness started producing electricity in 1988 and was scheduled to close in 2023. Owners, EDF Energy recently extended this date to 2030. It shares problems of cracking in the graphite core with Hunterston and in addition has had to close down on several occasions in the last decade as a result of jellyfish and seaweed clogging the secondary seawater cooling systems.

## We don't need nuclear

In the past Scotland has generated an energy surplus. In 1989 primary energy capacity in Scotland was 45% more than the level of demand. The margins are now much narrower. Reliance on ageing nuclear capacity rather than planning for non-nuclear green alternatives could result in a shortfall in supply in the future. We can decarbonise through further development of wind, solar, wave and tidal energy. Nuclear is unnecessary, expensive, poses a high risk to health and wellbeing and only exists because it is essential to the nuclear arms programme. Retention of current nuclear capacity is not only high risk but also acts as a barrier to the development of a long-term sustainable system of energy production.



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## Urgent need for action

EDF want to keep operating both reactors at Hunterston. They have redefined the 'safe' limit for the number of permitted cracks in the cores. But the level of risk is just too high. The Westminster Government and EDF are desperate to get Hunterston back on line. Tory policy of building new reactors, rather than investing in renewables, is in tatters as first Toshiba and now Hitachi back out of new build in Cumbria and Wales. The projected cost of energy from the planned Hinkley C reactor far exceeds the cost of wind and solar.

We need to see the end of nuclear as part of a shift to a sustainable economy. The role of a national investment bank and a national energy company is crucial in making a rapid move to clean, safe energy. In the process more than 100,000 new climate jobs could be created in Scotland. While current discussion of these initiatives by the Scottish Government is welcome a much greater sense of urgency and a commitment to a climate jobs strategy is required. Closing Hunterston can be step one in building the campaign that's required.

## About Scot E3

**E3 is a group of rank and file trade unionists, activists and environmental campaigners.**

We believe there is a compelling case for a radical shift in energy policy. Large numbers of jobs have been lost in the Scottish oil and gas sector. Nearly a third of Scottish households suffer from fuel poverty with the elderly worst affected. At the same time we face the prospect of catastrophic climate change, which will wreck the future for our children and grandchildren. We have the knowledge and the skills to make a difference to people's lives in the here and now. Leaving things to 'the market' is not working. A sustainable future requires a coherent strategy for employment, energy and the environment. We need a sense of urgency. We need a coordinated strategy and massive public investment.

