



Supporters of Nuclear Energy

Newsletter

No 239

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A summary of the talk given at the 2018 SONE AGM by Alan Woods, Director of Rolls Royce.

Notes by Wade Allison

Alan Woods described the ideas behind the 440 MWe small reactor that the consortium lead by Rolls Royce has proposed to the UK Government. Unlike many of the other designs that are jostling for attention and support around the world, including the UK, it is based on standard PWR (Pressurised Water Reactor) technology with standard fuel. As such it does not require any basic R and D.

The innovation they have introduced is based on:

- the small footprint for the plant is set on a seismic-stabilised raft;
- all elements of concern to regulators are on the raft and therefore not site-specific;
- the construction uses standardised elements, modules that are factory built, inspected and tested, and then delivered to the site by road;
- assembly on site is under an all-weather canopy over the raft to allow tightly controlled construction schedules;
- a supply chain that is largely UK-based.

They say that such a plant could deliver electricity at £60 per MWh, or £40 per MWh with the benefit of 4.5% financing as is available on export orders. Such output would be available 24/7 for 60 years or more, compared with “renewables” with a 30% duty factor for 30 years or less. They have received considerable interest from overseas. A unit could be constructed in 2+2 years and orders for 16 units would be sufficient to show a profit. Discussions with

the Treasury are in hand but further progress awaits a political go-ahead from BEIS.

More details are available on their website: <https://www.rolls-royce.com/products-and-services/nuclear/small-modular-reactors.aspx#/>

MINUTES OF SONE ANNUAL GENERAL MEETING 2018 SUPPORTERS OF NUCLEAR ENERGY

**Held at Society of Chemical Industry, 14/15 Belgrave Square,
London SW1X 8PS**

Monday October 22, 2018 at 2 pm

Present: Gordon Adam, Wade Allison (Chair for items 1-4), John Assheton, John Brenner, Neville Chamberlain, Philip Foster, Joseph Lambert, Robert Maclachlan, Ian McFarlane, Angus Ross, Jack Simmons, Robin Smith, and (from Rolls Royce by invitation) Alan Woods and Andrew Munro.

1. Apologies for absence were received from Charlotte Assheton, Harold Bolter, Adrian Bull, David Chatfield, Gerald Clark, Lord Clitheroe, Ken Durrands, Andrew Harris, Damon de Laszlo, Ernest Maxwell, Anton van der Merwe, Douglas McDevitt, Barry J Yates, Bill Williamson
2. Minutes of the previous meeting held on October 23, 2017 (and circulated with the agenda) were accepted with a correction: Robert Camborne had given apologies, not Robert Maxwell as minuted.
3. There were no Matters Arising
4. Neville Chamberlain was elected Chairman of SONE and a Director (nem con)
5. Wade Allison was re-elected Honorary Secretary and a Director, and Ian McFarlane was re-elected Honorary Treasurer and a Director.
6. The following were re-elected to the Committee for the year 2018/9: Neville Chamberlain, Wade Allison, Ian McFarlane, John Assheton, Adrian Bull, Gerald Clark, Damon de Laszlo, Jack Simmons, Robin Smith, Paul Spare, Bill Wilkinson. In addition, Anton van der Merwe, Professor of Immunology at Oxford University, was proposed and elected to the Committee.

7. The Directors' Report and Accounts for 2017/8 had been circulated to all members with the Agenda and were approved.

It was suggested by Robert Maclachlan that significant costs would be saved in future if the accounts were simplified, and reviewed by a member familiar with accounting, instead of paying for expensive service from an accountants partnership. It was agreed that the Committee should consider this suggestion.

8. Membership changes. It was agreed to add new classes of SONE membership to those of Patrons, current Life Members and Annual Members:

Student Membership open to those currently enrolled on a degree course upon payment of an annual subscription of £5;

Honorary Membership open to selected supporters by invitation of the Committee;

Permanent Membership (lasting for 10 years or the winding up of SONE) open to supporters upon payment of a single advance subscription of £125.

It was further agreed that the class of Life Members be closed to new applicants.

9. In his report the Secretary, Wade Allison, encouraged all members of SONE to spread news of the benefits of nuclear power at this time when carbon fuels are frowned upon and so-called Renewables are demonstrably weak, intermittent and destructive to the environment. He urged all members to enrol eligible family as student members – theirs is the generation that will need the security that nuclear power offers. He asked members to bring to his notice opportunities to speak or write, especially addressing young people, as well as MPs and other opinion formers.
10. The invited speaker was Alan Woods, Director of Rolls Royce. (A brief resume of his talk is given above.) Those present expressed great interest in what he had to say and the lively discussion raised welcome hopes for the future of the nuclear industry in the UK.
11. The meeting closed at 4.30 pm. For your diary: the 2019 AGM will be on 21 October 2019.

ENERGY IN A DEMOCRACY: PEOPLE NEED TO KNOW

Climate Change, Renewables and Nuclear Power

Wade Allison

16 October 2018

[This article was submitted to the Financial Times as an opinion piece on 15 October, but they reported back: *The piece raises an important issue, but unfortunately we won't be able to accept it because we have already published extensive coverage of the IPCC report.*

It has since been posted on social media where it has been widely read.]

The report from the IPCC published last week tells us what is already becoming clear to many, namely that the era of carbon burning should end and that our way of living will change. So we are faced with a historical choice:

- ignore the problem and expect others to be prepared when extraordinary disasters occur;
- engage personally in understanding the alternatives and be proactive in preventing conditions overwhelming us and our children.

Experience shows that the first is unrealistic and is bound to fail. In a democracy the second is the choice that everyone who is able should make, however difficult that may seem. What are those alternatives and how may they be simply understood? Look first at the principles and leave the numbers until later.

Mankind gained ascendancy on Earth when he dared to domesticate fire, a step that no other animal ever made. Energy in the pre-industrial period came from the Sun via the wind, water power and the growth of vegetation. However, this supply in its various forms was limited, weak and intermittent. The Industrial Revolution replaced these with fossil fuels and steam power bringing a great leap forward in the human condition and the size of population supportable on the Earth. However, the IPCC is now telling us that that is not true, the consumption of carbon fuels in any form – coal, oil, gas, vegetation – is not sustainable for the population and lifestyle we expect today.

What are the options? We may join Donald Trump in dismissing the science that the IPCC shows us, but few are ready to do that.

More popular is the alternative of going back to the use of exclusively pre-industrial sources of energy, now called Renewables. It is true that their energy can now be harvested by modern means over vast areas, but the sources are weak as they always were. To replace a large fossil fuel power station requires hundreds of huge windmills over several square miles or a similar area closely plastered with solar panels. Alternatively large rivers can be dammed generating ecological scars and displacing communities on a grand scale. Much damage has already been done on the Nile, Yangtze, Tigris and Mekong, but the number of suitable rivers is limited and water is itself a precious resource. These Renewables damage the environment and can hardly be described as Green!

But even more serious is the oft-described intermittency of Renewables: they cannot provide energy, anytime and anywhere, as a modern economy needs. Some opinion relies on the Micawber Principle, that in the end “something will turn up”, but there are clear scientific limits, for instance from the Periodic Table of the chemical elements on prospects for battery technology.

But science already offers another source, first revealed by Henri Becquerel and Marie Curie, and fully studied for over a century. Nuclear energy is accepted by some but feared by many. Compared with coal nuclear power provides nearly a million times the energy per kilogram of fuel, any time and almost anywhere. Plants are robust and compact, requiring as little as 15 hectares for one giga-watt output. And what about their safety and impact on the environment? “Look what happened at Chernobyl” is a frequently voiced reaction. The accident in April 1986 devastated a large region in Ukraine that had to be evacuated – but did it? Wildlife pictures recorded there in recent years report that animals living in the region are thriving, radioactive but better off now without human interference than they were before. The animals must know something that we do not.

“But they know nothing” Doctor Watson might say to this.

“Quite so” Sherlock Holmes might reply, *“but we may know something that isn’t so.”*

The evacuees at Chernobyl were terrified when told that they had been

irradiated and should leave their homes immediately. This unseen and unexplained condemnation caused severe mental illness and social damage, but only 43 deaths can be linked to the radiation itself – 28 workers and 15 thyroid deaths in the wider population. The thousands of deaths and the waste land expected by most commentators never happened. The truth was reported by IAEA and WHO in 2006, though stopping short of concluding that the health effects of radiation are significantly over-stated. As a result the human tragedy was repeated at Fukushima in 2011. Although there were no casualties from the radiation, the unnecessary evacuation and the fear, as devastating as a mediaeval curse, caused much human suffering. Expensive economic and technical steps were taken around the world following the accident. But the message from the animals at Chernobyl shows that those steps were unnecessary.

I have spent many years understanding how life is affected by radiation and how we have come to fear it. Nuclear energy is very powerful, even compared with chemical energy. Both are parts of nature and can be abused to make weapons. A nuclear explosion may cause local destruction and fire, but the release of radiation is not the threat that the Cold War encouraged everybody to believe. Anyway nuclear energy plants cannot explode like bombs and the tiny quantity of waste they produce has never caused a fatality in 60 years.

Why is radiation so relatively harmless? From its beginnings 3,500 million years ago life had to evolve fool-proof ways to survive natural radiation and other oxidative agents, particularly with an immune system to suppress cancerous growth. Civilisation has no such immunity from Climate Change. Its survival will depend on gaining widespread acceptance of nuclear power in society through changes to education and public health, similar to when it domesticated fire all those millennia ago. An informed society would set a simple safety threshold for low and moderate radiation dose rates. That would halve the time and effort to provide nuclear power from smaller local plants that also offered desalination, hydrogen production and district heating. In this way financial and regulatory obstacles should be dramatically reduced with popular understanding.

Wade Allison

LATE NEWS

from an editorial in the Boston Globe:

“The ongoing woes of the nuclear industry have put a tremendous amount of non-emitting electricity at risk, and the potential to lose those resources could undo the nation’s recent progress in reducing its greenhouse gas emissions.

It’s hard to imagine a group with stronger historic anti-nuclear bona fides than the Union of Concerned Scientists — in the same way that Nixon was an anti-communist beyond reproach. Hopefully the group’s climate pragmatism now will carry more weight with nuclear power skeptics and help ensure that states will have the full toolbox they need in the years ahead.”

<https://www.ucsusa.org/nuclear-power/cost-nuclear-power/retirements#.W-r6PuKYQZs>

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