

**ONR - Stop Hinkley meeting
28 January 2020
Mercure Hotel, Bridgwater**

Office for Nuclear Regulation present:

Adrienne Kelbie (AK) – Chief Executive (meeting chair)
Mark Foy (MF) – Chief Nuclear Inspector
Tim Allmark (TA) – Civil Engineering and External Hazards Professional Lead
Tanya MacLeod (TM) – Principal Inspector, External Hazards
Dr Shane Turner (ST) – Head of EPR Regulation

Environment Agency:

Alan McGoff (AM) – New Build Lead

NGO representatives present:

Sue Aubrey (SA) – Stop Hinkley
Allan Jeffery (AJ) – Stop Hinkley
Roy Pumfrey (RP) – Stop Hinkley
Katy Attwater (KA) – Stop Hinkley
Prof. Andy Blowers (AB) – Blackwater Against New Nuclear
Varrie Blowers (VB) – Blackwater Against New Nuclear
Chris Wilson (CW) – Together Against Sizewell C
Jennifer Wilson (JW) – Together Against Sizewell C
Dr Jill Sutcliffe (JS) – Low Level Radiation and Health Conference

Secretariat:

Daniel Jones – ONR Communications Manager

1 WELCOME AND INTRODUCTIONS

- 1.1 Adrienne Kelbie (AK) began by welcoming all attendees to the meeting. AK invited Dr Jill Sutcliffe (JS) to provide an update on the health of two members of the NGO Forum (Dr David Lowry and Phil Davies). Attendees were invited to sign a get well card to both of them. AK, on behalf of all ONR and EA attendees, passed on best wishes to both.
- 1.2 AK invited all attendees at the meeting to introduce themselves.
- 1.3 Katy Attwater (KA) on behalf of the Stop Hinkley group provided some opening remarks. KA thanked ONR attendees for taking the time to attend the meeting. KA expressed the Stop Hinkley group's view that in an uncertain and rapidly changing world of climate crisis, the group questioned the wisdom of continuing with nuclear power technology, which it believes is dangerous and unstable. KA said that the group felt that in pursuing such technology, problems were being created for future generations to deal with, at the same time as they would be dealing with climate change, floods, shortage of food, disruption of infrastructure and possibly civil unrest. KA expressed view that she felt it would be irresponsible and dangerous to continue with this technology.

- 1.4 KA acknowledged that the Stop Hinkley group considered ONR to be excellent at managing the regulation of the existing fleet of nuclear power stations and associated waste. KA suggested ONR should now begin exploring:
 - a. Whether we should be building new nuclear power stations and SMRs and whether the GDF will happen in current anticipated timeframe.
 - b. How and when nuclear facilities should start to be shut down and made safe as climate change progresses.
- 1.5 KA referred to the weakening of the Atlantic meridional overturning circulation (AMOC) in the last 150 years compared to the previous 1500 years and noted the distribution that the melting of the Greenland ice cap would have on the AMOC and the potential for this to lead to more frequent extreme weather events.
- 1.6 KA also noted some of the other issues that had been discussed by the ONR Expert Panel, including: heatwaves, storm surges and the potential for oceans to warm to a greater extent than previously indicated by the IPCC 5 years ago. KA expressed that these climate change-related issues was the reason that Stop Hinkley opposed nuclear new build.
- 1.7 KA concluded by asking if ONR had the resources and political support to deal with these issues currently and in the future. KA also stated the willingness of the Stop Hinkley group to support ONR in making the nuclear industry safe to pass on to future generations.
- 1.8 Allan Jeffery (AJ) commented that in the national news (28.1.2020) there had been reports that the Thwaites glacier is melting.
- 1.9 Prof. Andy Blowers (AB) expressed the view that we are at a critical juncture, commenting that awareness of climate change has grown significantly. AB added there was uncertainty on the future management of waste, and with regards to climate change, there is the possibility of unforeseen changes. AB commented that, in his view, proposed new build sites including Sizewell C, Bradwell and Hinkley Point C, were vulnerable and that the idea of 'adaptive management' beyond the next century is 'farcical'. He expressed his opinion that the Environment Agency needed to intervene and stipulate that the new build should not proceed.
- 1.10 Dr Jill Sutcliffe commented that the prominent scientist Prof. David King had, apparently, said scientists were 'scared' to speak of their predictions on climate change.
- 1.11 AK proceeded to invite the Chief Nuclear Inspector, Mark Foy to address the meeting.

2 ONR'S ROLE AS AN INDEPENDENT REGULATOR

- 2.1 Mark Foy (MF), ONR's Chief Nuclear Inspector, welcomed attendees and opened his presentation by emphasising that ONR was aware of the concerns that members of the NGO community had on climate change and that ONR did not ignore what was being said in relation to this issue. He added there was lots of work being undertaken globally to look at climate change and that he hoped this meeting was an

opportunity for ONR to give some reassurance about the methods that the organisation adopts, to ensure that sites are both safe and secure from external hazards. MF also suggested ONR would consider holding an event dedicated to the topic of climate change at a later date, to bring interested parties together.

- 2.2 Alan McGoff (AM) expressed the view that climate change was an emergency and required every country to contribute to tackling it. AM advised that the UN Climate Change Conference in Glasgow (COP26) in November 2020, in his view, would bring greater attention to the issue.
- 2.3 MF moved to address the following questions submitted in advance of the meeting by NGO representatives (shown as 1 & 6 on slides).

Question 1

- *ONR is the official nuclear regulator. To us, that implies at least a 'critical friend' relationship with the nuclear industry. Our view is that in too many instances, ONR appears a defender of or cheerleader for the nuclear industry. ONR representatives in an audience of nuclear industry representatives talk about 'we' as opposed to 'you', as if their role is promotion of the nuclear industry as opposed to its regulation. How would you respond to that?*
- *On the other hand ONR punish operators with huge fines, many paid out of tax payer's money. Where does the money go? Is this the best way to motivate operators not to cut corners on safety?*

Question 6

- *If things go seriously wrong, what guarantees are there that EDF and the Chinese won't walk away?*
 - *This is what TEPCO pretty much did and the Japanese government and International community had to step in. Their Regulatory body is being held accountable, not TEPCO, for ignoring the warnings about earthquakes and Tsunamis.*
 - *What is the ONR position in this situation in the UK?*
- 2.4 MF confirmed that ONR's role is clearly defined in the Energy Act, which outlines the role of the organisation as the country's independent nuclear regulator. MF emphasised that ONR's mission was about protecting society and not about promoting the nuclear industry and drew attention to ONR's 2020-25 Strategy. He added that ONR would co-operate with industry to ensure improvements to safety and security, but explained that was quite different to promoting the nuclear industry. MF confirmed that it was for government to decide on whether to pursue a nuclear new build policy, but ONR would help to inform policy to ensure that 'decision makers' were properly informed.
- 2.5 KA asked how strongly ONR puts its case to government to ensure it has the resources it needs.

- 2.6 MF advised that the 'Tim Stone Report' resulted in the formation of ONR, the report identified that the nuclear regulator at that time was not in a position to support a nuclear new build programme and made recommendations to ensure that would be suitably resourced and prepared. These recommendations were all acted on and MF confirmed that ONR now has over 400 warranted inspectors, compared with around 180 in the early 2000s, with the organisation being adequately resourced, having the capacity and capability to regulate across its purposes. He added that ONR was now using different 'pipelines' to recruit staff into the organisation.
- 2.7 Jennifer Wilson (JW) asked for clarification on how the recruitment was being funded.
- 2.8 MF confirmed that direct charging of licensees provide the majority of ONR's funding, with around 2% coming from the Department for Work and Pensions.
- 2.9 MF advised that government has provided ONR with additional funding to develop the competency within the organisation to regulate new technologies. MF confirmed ONR has completed 7 technical assessments of proposed new technologies on behalf of the Department for Business, Energy & Industrial Strategy (BEIS). He also advised that ONR is prepared for and, has inspectors in place to regulate new and novel technology.
- 2.10 AK commented that there has been considerable work to build capacity and capability across the organisation over recent years and that ONR will continue to do this. AK added that ONR would raise concerns with government regarding capacity and capability if it felt it needed to do so. MF added that the concerns of KA and others were not lost on ONR.
- 2.11 In response to Q1 - MF advised that as a regulator ONR can take a duty holder or licensee to court. However, MF expressed the view that prosecuting a duty holder or licensee was a last option and advised there was a range of other options open to ONR before reaching that stage. MF advised that for organisations in public ownership, the fines levied following a prosecution could be perceived by some as being 'recycled', but this is not a matter for ONR. MF added that being taken to court does have the effect of highlighting shortfalls and does have a significant reputational impact upon on an organisation.
- 2.12 KA expressed the view that things seem well planned, but in dealing with issues associated with climate change, events won't necessarily happen in a planned way. KA added that if extreme weather events occur, it will impact on the ability of ONR to regulate effectively and asked: how can the organisation deal with this?
- 2.13 MF advised that ONR and Industry have contingency plans in place that cover how they will deal with extreme circumstances, which recognise the abnormality of such events and what is required to maintain safety and security. These arrangements are also intended to ensure that we can continue to regulate effectively. MF also added that the plants themselves are designed to withstand extreme conditions, events that are only likely to be seen once in 10,000 years and that he hoped the discussion today would provide confidence in these arrangements.
- 2.14 KA commented that imposing fines on duty holders could affect safety on a site.

- 2.15 MF explained that this has not been the case; it is right and appropriate for ONR to pursue punitive penalties with dutyholders where they have broken the law. He added that ONR has made significant effort to ensure that relationships are not undermined with organisations that have been prosecuted.
- 2.16 Turning attention to Q6, MF advised that whoever holds a site license is legally accountable under the Nuclear Installations Act for that site and is required by law to have liability insurance cover in place. MF added that in Japan, TEPCO are supporting the clean-up of the Fukushima Daiichi nuclear power plant following the earthquake and tsunami which hit the site in 2011.
- 2.17 JW asked what would happen if disasters occurred in different countries simultaneously.
- 2.18 MF advised that it was down to sovereign states to deal with the situation in their own countries, but as happened in Fukushima the international community would rally to support affected nations. International agencies such as the IAEA would also seek to coordinate activities across national boundaries
- 2.19 Following a comment on unfortunate events in Japan at Fukushima, MF advised that all nuclear licensed sites in the UK are required to undertake a Periodic Safety Review (PSR) every 10 years that ensures nuclear facilities undertake a structured review of the design/safety of its nuclear plant against modern standards. They then have to implement a programme of improvements for shortfalls identified against modern practice. He added that there had been some issues with plant layout on the Fukushima Daiichi site that did not follow relevant good practice at the time of the accident. MF confirmed that licensees also undertake smaller annual reviews, outside of the PSR cycle, to ensure they consider the need for improvements to their plants more frequently. If ONR considered it necessary ONR has the powers to require the licensee to undertake a review of the design/safety of its facilities. MF cited the example of the stress tests undertaken in the UK following the events in Fukushima.

3 ONR'S ROLE IN ASSESSING EXTERNAL HAZARDS

- 3.1 Tim Allmark (TA), ONR's External Hazard Professional lead and Tanya MacLeod (TM), ONR Principal External Hazard Inspector, opened their presentation by clarifying the role of ONR in assessing external hazards. They proceeded to outline the hazard requirements for nuclear power stations and explained the 'design basis' threat, using a frequency illustration that has been provided to NGOs. TA and TM also provided an overview of the ONR technical guidance used by ONR's External Hazard specialists.
- 3.2 KA questioned the '1 in 10,000 yr' event principle.
- 3.3 TM commented that ONR tries to ensure that 'cliff edge' events are avoided and cited the significant investment made at the Hinkley Point C (HPC) site in estimating potential seismic activity.
- 3.4 KA commented that the ground conditions at HPC were preventing the use of cranes at the site.

- 3.5 TA confirmed that HPC had been characterised in detail and cranes including 'Big Carl' would be able to operate safely, subject to conditions being appropriate. It was routine to undertake regular checks on the foundations for cranes and to have strict operating rules especially around wind conditions which restrict use when necessary

4 CLIMATE CHANGE CONCERNS IN RELATION TO HPC SAFETY CASE AND GDA SITES

- 4.1 TA and TM moved to address questions 2 & 3 that had been submitted in advance of the meeting.

Question 2

- *Is it fair to say that the HPC Safety Case only covers existing sea levels?*
- *Which agency approved the extreme flood level of 9.52m in the HPC Design Consent Order based on UKPC09? Was it the Environment Agency or the ONR?*

Question 3

- *Which sources of data are you accessing for the latest developments in the predictions of sea level rises due to climate change?*
- *You said "the time taken for sea level changes is significantly longer than the time required to implement the planned managed adaptive options". How do you know this and what are the planned managed adaptive options?*
- *Have you had sight of the Licensee's specific plans for dealing with a more rapid rise in sea levels than they might reasonably foresee?*
- *Do they have specific plans for the safety of the two working reactors and the storage of the spent fuel rods close to the shoreline until 2200 (when spent fuel rods can safely be moved) and then the decommissioning phase and beyond?*

- 4.2 TA and TM advised that HPC safety cases would need to consider potential impacts of climate change and sea level rise. They explained that ONR expects all licensees to consider potential impacts of climate change, such as sea level rise, in their safety case submissions; and added that ONR looks beyond credible maximum climate change effects.

- 4.3 In response to Q2 (bullet point 2) TM confirmed that ONR and the Environment Agency are both statutory consultees. She advised that the figure of 9.52m is an extreme sea level rise, which has now been revised upwards to just under 10 metres. She confirmed that both ONR and the Environment Agency (EA) consider that to be adequate in accordance with their separate purposes. MF added that both ONR and the EA would determine a view on the height, but would work together to align that view, both regulators would raise the matter with the licensee if we had concerns about it.

- 4.4 TM confirmed that ONR will require licensees to migrate to UKCP18 data in due course and that ONR keeps track of scientific developments through the expert

panels that it has in place. TM acknowledged there is uncertainty regarding the melting of the ice sheets, but explained there is a significant lag time between when the melt initiates and any potential impact on a site, thus enabling measures to be put in place.

- 4.5 Allan Jeffery (AJ) asked about the 'managed adaptive approach' for HPC.
- 4.6 TM advised that there is a sea wall which could be altered in size. MF added that it was recognised by the licensee of HPC that, in time, additional improvements may need to be implemented to account for impacts of climate change and that it had been proactive in factoring this in to the existing design.
- 4.7 AB asked in relation to the Sizewell C, Bradwell B and Hinkley Point C sites, if the 'Managed Adaptive Approach' could protect nuclear infrastructure islands.
- 4.8 MF commented that such an occurrence would be an extreme event. MF added that all licensees are required to ensure that in such an event, reactors could remain in a safe state.
- 4.9 AB questioned why reactors would be built in these coastal locations. Varrie Blowers (VB) asked if ONR provided government with advice when potential new build locations were being considered.
- 4.10 TA confirmed that both ONR and the EA discussed with government what criteria to use for the initial National Policy Statement (NPS). TA explained potential site locations were put forward by third parties and not ONR. TA confirmed that ONR had provided advice to government over possible sites.
- 4.11 AB commented that existing potential new build sites are not nominated beyond 2025 and asked if ONR had provided updated advice to government.
- 4.12 AM advised that the NPS refers to sites as being potentially suitable, as they would still need to go through the full regulatory approval. AM added that BEIS is currently reviewing the existing NPS to cover the period 2026-35. TM confirmed that ONR was preparing updated advice to provide to government with regards to the suitability of the potential new build sites, but had not yet submitted this.
- 4.13 MF added that ONR will provide a submission which will take into account the latest scientific information.
- 4.14 JS commented on the potential uncertainties with climate change, noting that the Somerset levels were flooded 16 years ahead of predictions. JS also commented on the coastal realignment at Medway and the implications this had on the sea wall, which has now reached tolerance levels.
- 4.15 AM explained that the '1 in 10,000 yr' event applied to nuclear infrastructure is much higher than the general level of protection applied to other infrastructure projects.
- 4.16 Chris Wilson (CW) asked for the time limit on submitting responses to government.
- 4.17 TM advised ONR was waiting for clarification on some matters from BEIS, but confirmed ONR would submit its advice to government.

- 4.18 Roy Pumfrey queried grid connection at Hinkley Point C.
- 4.19 Shane Turner (ST) confirmed that grid connectivity was an area looked at as part of site licensing.
- 4.20 TA and TM moved to address questions 23 & 24 that had been submitted in advance of the meeting.

Question 23

- *In terms of climate change predictions, what level of temperature rise will be used - whilst government refer to 1.5C increase, many expect at least 3.0C by 2100s.*

Question 24

- *A consequence of global warming is a rise in sea and, especially, estuary water temperatures. What assessment of risk to the impact on cooling the reactors has taken place for HPC? Is there a water temperature at which operators would be instructed to shut down? Who makes the decision on this and the additional implications of the hot water from the reactors on the marine environment?*

- 4.21 TM noted that there are 2 aspects here. The maximum air temperature at the site and the background rise in global temperatures which support the climate change predictions. For both aspects, the level of temperature rise taken into account in the HPC safety case is in excess of 3.0C due to climate change.
- 4.22 In the current HPC safety case, a maximum instantaneous high air temperature of around 44 degrees C is accounted for in the design basis which represents an increase of more than 3.0C compared to present day. In terms of the background rise in global temperatures, ONR will expect HPC to apply a UKCP18 representative concentration pathway (RCP) associated with an increase in global mean temperature in excess of 3.0 C when it migrates to UKCP18. .
- 4.23 In response to Q24, TA and TM advised that EDF has assessed the range of temperatures within which HPC will be able to operate at. HPC reactors would have operating rules which would restrict operations such that if the temperature of cooling water rose above predetermined safety limits the reactors would be shut down. AM also noted that there were limits in the discharge permit which only allowed water to be returned to the Severn if it was below 35 C (99.5 percentile) and that there were limits on the change in temperature from the inlets to the outlets. These limits were required for environment protection.
- 4.24 AJ commented on the power stations that have shutdown in Scandinavia due to a rise in cooling water temperatures.
- 4.25 AM noted that the maximum temperature limit meant that if the temperature of the inlet water rose significantly the power output of a plant would have to be reduced so as to ensure the limit was not exceeded and so protect the environment. Reducing

power or shutting down if required showed responsible management to protect the environment.

- 4.26 TA and TM moved to address questions 4, 7, 22 that had been submitted in advance of the meeting.

Question 4

- *The phrase “occurs once in every 10,000 years” appears in the HPC pre-construction safety case at the Download centre for HPC PCSR reports dated 2017 - how does this equate to the occurrence of the four events in 70 years of: Windscale, Three Mile Island, Chernobyl and Fukushima, as well as locally the great Somerset flood/tsunami of 1607?*

Question 7

- *Is the latest height of the sea wall in front of HPC going to meet the A and B station walls at equal height? Or is it higher?*
- *If its higher how can the ONR assure the safety of the A and B waste store and stations during the timescales we have to consider?*

Question 22

- *Will ONR/EA use UKCP18 climate projections as basis for assessing SZC flood risk, or more up to date data.*

- 4.27 KA expressed concern about the term ‘1 in 10,000 yr’ event and commented that she didn’t think the term was easily understood.
- 4.28 MF advised that the term was intended to give confidence that safety was not compromised and that a facility had been robustly designed to withstand an event that is predicted to occur only once in 10,000 years, a significant but low frequency event.
- 4.29 KA commented that she was confident ONR does everything it can to assess External Hazard risk. AJ added that public perception of risk is important and that using a term such as ‘1 in 10,000’ in his view could be misleading to the public.
- 4.30 AB added that he believed the public was aware, and afraid, of nuclear. He added while he believed the public recognise that the chance of an accident is low, this doesn’t mean it couldn’t happen.

Action 20/01 – ONR to consider how we explain the term ‘1 in 10,000 yr’ event, so that it can be more clearly understood by the public.

- 4.31 TA/TM advised that the Hinkley sites (A, B and C) are each operated by a different licensee, and each has to take account of the presence of the other and the risks they present. They explained ONR needs to ensure that the respective risks posed by each site are taken into account. They added that a PSR was recently completed for Hinkley Point A and that a PSR was completed for Hinkley Point B in 2015. MF

added that 'A' station has lots of intermediate level waste on site while 'B' station has a different type of fuel on site.

- 4.32 AJ asked how the sea walls would connect and protect the different stations.
- 4.33 TA advised that a topographical study has been undertaken to ensure 'outflanking' doesn't occur. TA confirmed that the licensee has obligations to look at and maintain sea defences. AM added that the Environment Agency would also provide advice on sea wall defences, recognising that hard defences can impact other areas of the coast.
- 4.34 TM confirmed UKCP18 climate projections would be used in any assessments ONR conducts in relation to the proposed new build development at Sizewell C.
- 4.35 TA and TM moved to address question 8 that had been submitted in advance of the meeting.

Question 8

- *At what point relating to sea level rise and safety aspects would ONR insist on new 'action' to be taken by EDF on the building of HPC?*
- *Due to the vulnerability of the entire coastal area around Hinkley and the new scientific data regarding climate change and continuous sea level rise, the current build is on out dated plans even taking into account periodic reviews. At what point in the future will you insist EDF implements new up to date plans?*
- *If plans are 10 years out of date shouldn't they be brought forward immediately?*

- 4.36 Using a selection of images of the construction of the sea wall in front of the Hinkley Point C site, TA explained the 'managed adaptive approach' and advised that the wall is being constructed in such a way, so that it can be readily raised in height at a later date if required. He confirmed that ONR had discussed the proposals in depth with EdF ahead of the start of construction.
- 4.37 AJ asked for clarification where the cooling ponds would be located at HPC.
- 4.38 ST confirmed that the fuel ponds would be constructed on the 14 metre level.
- 4.39 ST/TA added that the HPC licensee will need to demonstrate in safety case submissions that it can construct and deploy measures in extreme events; and that their plans need to take account of the uncertainties associated with climate change. They confirmed that ONR was satisfied that the sea wall under construction was adequate.
- 4.40 AM advised that the Environment Agency produces shoreline management plans for sections of the coast.

Action 20/02 – AM to supply Stop Hinkley group with shoreline management plan for Bristol Channel.

4.41 ST moved to address questions 9, 17, 26 and 27 that had been submitted in advance of the meeting.

Question 9

- *When does the ONR think that EDF will formally apply to change the high level waste storage from wet to dry?*
- *Will the initial cooling ponds be high enough above sea level and the waste store be safe in regard to flooding?*

Question 17

- *Which organisations are responsible for the cooling water tunnels necessary for the steam generation cooling? EA, EDF, ONR, Crown Estate Commissioners, or Marine Authority or someone else?*
- *Responsibility for safety of building structures, the construction workers, the end maintenance workers, the marine ecology, the environment in and out of the tunnels. Who is ultimately responsible for it all and who will oversee these different aspects?*

Question 26

- *The climate emergency should mean that the UK will assess the sustainability of all major future operations and aim for reduction in electricity demand. Is the demand for electricity to be used for the cooling ponds and a Dry Fuel Store (DFS) beyond the operating life of a NPP assessed? By whom? If there never is a GDF, what are the implications?*

Question 27

- *Beyond its normal operational period, the cooling ponds and DFS will require electricity supplies. Do the ONR assess the risk of disruption to those supplies from increased risk of flooding from sea level rise and storm surges and extreme weather events into the 2100s?*

4.42 ST advised that the decision to move from wet to dry fuel storage (DFS) at HPC was a material change to the Development Consent Order (DCO), so would need to be submitted to the planning inspectorate. He confirmed that ONR has assessed and agreed to the modifications to the fuel building that facilitates the move to dry storage and is content with this change. ST directed NGO representatives to the report available on the ONR website (ONR-NR-PAR-18-004 Rev B.)

4.43 Sue Aubrey (SA) asked if DFS was safer than wet fuel storage.

4.44 ST advised that fuel would be stored in ponds for 10 years, before being placed into fuel canisters and moved to the dry fuel store. ST confirmed that once the fuel was in the dry fuel store, no active cooling was required and the fuel would remain in a

passive and inert state. He added that the fuel canisters are designed to protect the fuel from potential external hazards and that the dry fuel store would be designed to hold the fuel for around 120 years.

- 4.45 CW asked if HPC would be allowed to start commercial operations before the dry fuel store was in place.
- 4.46 ST advised that the original DCO was issued on the basis of the site having a wet interim spent fuel store. ST confirmed that although the complete safety case will not be produced until later, the outline safety case provided sufficient justification for ONR to be satisfied with the proposed DFS for HPC. He added the DFS would not be required until after about 10 years of operation and confirmed that it is ONR's understanding at this stage, that construction of the DFS facility will begin after the site has commenced operations. ST added that it was also ONR's understanding that a DFS would be the licensee's preferred option at Sizewell C.
- 4.47 AJ commented that fuel at HPC would spend 10 years in wet ponds and asked for clarification on how fuel is conditioned to ensure it is dry before it is encased. ST advised that after fuel is loaded into the fuel canister pressurised helium is used to displace the water in the canister. The helium is then heated and circulated throughout the canister to evaporate any remaining water until the correct level of humidity is reached. JW commented that (re: SZC) there has been no consultation on whether people want waste on site.
- 4.48 AB commented that with a proposed Geological Disposal Facility (GDF) still so long off, if high level waste has to be stored on sites, this would be imposed on the local public around those sites.
- 4.49 MF advised that at HPC it has always been clear that waste would be stored on site. MF acknowledged that the move from 'wet' to 'dry' storage had been less clear. He also added that ONR recognised a GDF facility was still a long way off being built, and that ONR recognised the implications of delays on the nuclear sector. MF confirmed that if construction of a GDF was delayed ONR would engage with government on the implications.
- 4.50 KA asked if the dry fuel store at HPC would be on the licensed site.
- 4.51 MF confirmed the dry fuel store at HPC would be constructed on the nuclear licensed site.
- 4.52 In relation to Q26, ST confirmed the fuel in the DFS would be in a benign state. ST used a series of illustrations to show how the fuel cask was designed and also showed some indicative designs of the Interim Spent Fuel Store.
- 4.53 VB asked what would happen if an event such as a plane crash occurred.
- 4.54 TA confirmed that as part of the Safety Case Assessment, these issues would be examined. Almost identical storage currently in situ at Sizewell B had been demonstrated to be robust against large aircraft crash.

- 4.55 In relation to Q17, ST confirmed that whilst on the licensed site, ONR is responsible for regulating worker health and safety and the nuclear safety function of the cooling water tunnels. ST advised that beyond the mean low water level, responsibility for regulating health and safety of workers during the construction of the cooling water tunnels (including underwater/diving work) becomes the responsibility of the Health and Safety Executive (HSE). ST confirmed that both the Health & Safety Executive and Maritime & Coastguard Agency (MCA) will regulate non-construction operational and maintenance work of the intake heads. HSE will lead on diving and MCA will lead on marine safety. ST added that ONR has a memorandum of understanding (MoU) with the HSE and HSE has an MoU with the MCA, which ensures full cooperation between the respective regulatory bodies.
- 4.56 AJ asked who had responsibility for maintaining the 'heads' of the intake tunnels.
- 4.57 ST confirmed that the licensee is responsible for doing this, but confirmed from a regulatory perspective, it would be the HSE and MCA that would have regulatory oversight regarding worker health and safety. MF added that ONR would have oversight to ensure the heads could function in terms of their nuclear safety role.
- 4.58 In relation to Q26 & 27, ST advised that only a very small amount of power was needed to operate the dry fuel store. No power is needed for cooling the fuel, with power only needed for temperature monitoring.
- 4.59 TA, TM and MF moved to address Q21 that had been submitted in advance of the meeting.

Question 21

- *At a more generic level we are becoming increasingly alarmed about the potential impacts of climate change on coastal infrastructures. I have written about these matters drawing attention especially to the question of the viability of sites in the longer term when radioactive fuel will still be present well into the next century. I fear that proposals for managed adaptation are simply not sufficient and that these sites should be abandoned as locations for new nuclear power stations. ONR may hide behind the idea that, in the case of Bradwell, it is engaged in generic siting. So, a general issue for us is whether the GDA process needs to be far more site specific especially when considering a specific design for a specific site.*
- *ONR and EA need to undertake their own, independent study of climate change forecasts and uncertainties.*

- 4.60 TA & TM advised that ONR would commission additional research if it didn't have the information required to make regulatory decisions and judgements. TA & TM confirmed they do consider UKCP18 projections to be 'relevant good practice'.
- 4.61 TM advised that she recognised UKCP18 projections were not based on the most cutting edge scientific data, but confirmed the ONR Expert Panel of leading researchers/academics was tasked with looking at the very latest scientific data and

ensuring ONR was kept informed.

- 4.62 KA commented that the UKCP18 projections were now out of date. KA questioned why the ONR Expert Panel only met annually and suggested a permanent body was needed.
- 4.63 AK acknowledged this was a fair challenge and requested this matter be left with ONR for further consideration.

Action 20/03 – ONR to consider whether the External Hazard Expert Panel should provide more regular updates on emerging climate science to ONR.

- 4.64 TA commented that ONR did need to consider new research findings, but explained there was danger in ‘grabbing hold’ of all new research. He advised that as regulators we needed to use research with provenance behind it.

5 EARTHQUAKES – IN RELATION TO THE HINKLEY SITES (A, B AND C)

- 5.1 TA, TM and MF moved to address Q20 that had been submitted in advance of the meeting.

Question 20

- *What operational procedures were happening at Hinkley at the time of the recent earthquake Thursday 5th December 2019?*
- *Did the recent earth tremor cause any operational changes because of it at Hinkley?*
- *What size tremor would cause the HPB reactor to shut down?*
- *What is the procedure for this?*

- 5.2 TA advised that the earthquake on 5 December 2019 around the Hinkley sites, measured 3.2 on the Richter scale. TA confirmed that tremors had not been felt at any of the Hinkley sites and confirmed that the seismic monitoring equipment at the Hinkley Point B site did not initiate any trips. He added he was not aware of any operational changes as a result of the earthquake. TA also added that shallow events of this size do not spread very far.
- 5.3 In relation to bullet point 3, TA advised that earthquake magnitude is a crude measure to use, explaining that when looking at earthquakes it was important to look at acceleration which can be used in evaluating the behaviour of structures systems and components. Each operating site establishes a level of acceleration below which it is safe to continue operating – this is known as the operating basis event. This is a low level of acceleration usually 5% of the acceleration due to gravity. In simple terms this is probably the maximum acceleration felt by anyone in a UK earthquake in the last 50 years and is approximately 1/5 of the size of the acceleration the plant is designed against.

5.4 TA proceeded to talk through the procedures which sites are required to follow in the event of an earthquake. He confirmed that following the earthquake in December 2019, checks were carried out on all cranes at the HPC site. TA added that significant work has been completed to assess and look at the fault lines at the HPC site using the latest scientific techniques. This had concluded that the existing faults were considered to be non-capable i.e they will not move as a result of seismic activity.

6 SUMMARY AND CLOSE

6.1 AK asked for comments from attendees on how they felt the meeting had gone.

6.2 AB commented that NGOs enjoyed meeting with ONR and acknowledged the effort the organisation takes to reach out to the NGO community and said he hoped what had been said by NGOs, would be taken on board.

6.3 TM added that she had enjoyed meeting NGO representatives and felt we were all clearly on the same side in wanting to ensure nuclear safety.

6.4 KA commented that she would like ONR to be stronger with government in its engagement. KA added that she did not believe a GDF would be constructed in the timescales currently envisaged. AB added that it was important the independent voice was being heard.

6.5 MF advised that at the moment ONR was comfortable with the proposed timescales for a GDF. MF explained if these were to change then that could have implications for the nuclear sector. He added that if this occurred, ONR would discuss the implications with government and seek to influence any mitigations considered necessary.

6.6 JS noted that it was often difficult to get hold of the latest research papers as many NGOs were not able to access such research.

6.7 VB commented that she felt uncomfortable with ONR being viewed as a 'critical friend' to government and questioned if ONR could in reality be this.

6.8 MF advised that as a regulator to industry, if we believed government policy was wrong then we would ensure views were made known to government.

6.9 AK concluded by thanking all attendees for coming along to the meeting and hoped all attendees had found it useful and worthwhile.

Action 20/04 – If appropriate, ONR to consider sharing relevant scientific research papers submitted by Expert Panel with NGO forum.

Action 20/05 – ONR to circulate the 'ONR Guide to Enabling Regulation'