

**ONR – NGO Teleconference
Update on Hunterston B
7 April 2020**

Office for Nuclear Regulation present:

Donald Urquhart (DU) –Deputy Chief Inspector and Director, Operating Facilities Division
Steve Harrison (SH) – Head of Assessment - Operating Facilities Division

NGO representatives present:


Rita Holmes (RH)
Sean Morris (SM)

Secretariat:

Daniel Jones – ONR Communications Manager

1 WELCOME AND INTRODUCTIONS

- 1.1 Donald Urquhart (DU) welcomed all to the call and wished everyone well during this period. He also thanked NGOs for submitting questions in advance.
- 1.2 DU advised that over recent months, ONR had provided updates to the North Ayrshire Council (3.2.20) and to some members of the local Hunterston Site Stakeholder Group (10.2.20). He confirmed both reactors at Hunterston B (HNB) remained shutdown.
- 1.3 DU explained that last year EDF submitted an appropriate safety case justification for Reactor 4 (R4), and we subsequently permissioned the reactor to return to service on 20 August 2019 up to the core output of Reactor 3 (R3). He confirmed that R4 was taken offline on 10 December 2019 when it reached the core output permitted in the safety justification. DU noted that, during this period of operation, the reactor had operated safely and as expected.
- 1.4 DU advised that since R4 was taken offline, 35 fuel channels had been inspected, and those results were within our expectations and, importantly, were bounded by the R3 core state.
- 1.5 DU confirmed that EDF has not submitted a safety case for further operation of R4, although he advised that ONR would expect to receive one, if we are able to accept the safety justification for R3.
- 1.6 DU then moved to provide an update on R3. He confirmed that a case to restart the reactor for a 6 month period had been submitted to ONR in June 2019.
- 1.7 He explained that our expert inspectors identified a number of areas which had not been addressed to our satisfaction in that safety case submission, relating to: debris; seismic build modelling; implications of uncertainties in end-face key strength (becomes more important as graphite irradiation increases); and the potential for in-

event (i.e. during a seismic event) failure of graphite bricks.

- 1.8 DU confirmed that on 23 March 2020, ONR received a revised safety justification for the re-start of HNB R3. He emphasised that this was still to complete its EDF internal assurance review, so effectively was still in a 'draft' state. DU explained that the submission of a 'draft' was customary practice and enabled ONR to have early sight and to allow early identification of any immediate areas of concern. He explained that he was aware that EDF's internal assurance review team had identified some issues, which would need to be addressed in the final approved version of the safety case, which ONR expected to receive at around 12.4.20. [**Post meeting note** – ONR received the final R3 safety case as of 15.4.20]
- 1.9 DU confirmed that EDF has amended the REMIT dates for R3 and 4, moving them to 1 June 2020 (R3) and 15 June 2020 (R4). He explained this was entirely a matter for EDF, and while it might be possible for ONR to complete its assessments by those dates, it would take 'as long as it takes'. He confirmed that EDF understood this.
- 1.10 DU moved to update on EDF's response to the COVID-19 pandemic. He confirmed that nuclear workers have been designated as 'key workers.' He also advised that EDF had implemented its pandemic response plan, which is available to view on the EDF website.
- 1.11 DU confirmed that EDF had taken a number of measures to reduce Coronavirus risk to the workforce at the HNB site, and indeed at all its sites.
- 1.12 DU confirmed that, at the moment, 50% of the HNB workforce was working at home, with daily staff levels on site reduced from 540 to 260. He listed a number of measures that EDF had introduced to protect staff during this period, which included ensuring that control room staff were in semi-isolation; changing shift patterns to increase resilience; moving contract partners to 12 hour shift patterns to align with rest of station; applying social distancing on the site, and reconfiguring certain tasks to minimise risk to staff if distancing is challenged. He confirmed safety related maintenance continues to be delivered on site, with some rescheduling of other less significant maintenance work to flatten the maintenance requirements. He also advised that preparations were being made to provide on-site accommodation to staff, if it is necessary.
- 1.13 DU explained that there will always be a requirement to shut down reactors if safe manning levels are ever threatened at a site. DU confirmed that he was very confident that, as a responsible licensee, EDF would do this electively if necessary, but advised that he had the delegated authority to direct them to shut down if they did not.
- 1.14 DU added that his site inspectors were maintaining regular contact with the HNB site, and with internal regulators, to ensure that safety is being maintained on the site, and to satisfy ourselves that social distancing measures were being applied on site.
- 1.15 DU concluded his opening remarks, by emphasising that ONR is the independent regulator who will determine whether the HNB reactors are safe to operate or not;

that ONR inspectors are acknowledged national/international experts in the field, with a very tight grip of their work. He emphasised that ONR decisions will be based on objective evidence, expertise, application of international and national standards, and the adequacy of the demonstration of safety provided; and that ONR will always act, without fear or favour as regards government, EDF, industry, trade bodies, NGOs or any other stakeholders.

- 1.16 [REDACTED] commented that he was not aware that EDF had submitted a safety case for R3 in June 2019. [Post meeting note: A review of records made after previous meetings confirms that ONR did comment on this at a previous meeting at which [REDACTED] has been present].
- 1.17 DU advised that ONR had always sought to be open with all stakeholders, and that this was not in any way 'secret'. Steve Harrison (SH) confirmed that it had not come to a point when ONR would have approved it, due to the need for further issues to be resolved.

2 ONR RESPONSES TO QUESTIONS SUBMITTED FROM [REDACTED]

Question 1 - *Among the reports ONR published in August 2019, it stated that at least "7 fragments and 51 smaller pieces had broken off from cracked graphite bricks" in R3. Has ONR requested EDF's views on this?*

- 2.1 SH confirmed that the figures quoted, were a combined total of the debris found in both R3 and 4. SH advised that EDF would be required to provide an adequate safety case addressing debris. He confirmed this was covered in our assessment of the R4 case last year, and will be considered further in the R3 assessment. SH advised that the R3 safety case received in June 2019 had not adequately covered the issue of debris.
- 2.2 [REDACTED] commented that it was very worrying that a large number of fragments had been identified and it was important this was not 'brushed under the carpet.'
- 2.3 SH confirmed that this issue had not been 'brushed under the carpet.' He explained the issue had been addressed in the R4 safety case last year. He added that this issue would also need to be addressed in the R3 safety case.

Question 2 - *The same report stated "significant uncertainty" existed about the risks of (this graphite) debris blocking cooling channels ... thus causing fuel cladding to melt..." Is there still "significant" uncertainty about this"? <http://www.onr.org.uk/civil-nuclear-reactors/hunterston-b-graphite-blocks.htm>*

- 2.4 SH confirmed that the graphite assessment did state that there was significant uncertainty in determining the true likelihood of a significant channel blockage due to debris. He advised that ONR has taken a precautionary (conservative) approach with regards to the risk from a partial blockage and as such, our fault studies inspectors treat the risk of a partial blockage as an infrequent event (10^{-4} pry). SH added that the R4 assessment did consider the likelihood and consequences of fuel clad melt and concluded they were tolerable.

2.5 SH added that EDF has since done some further analysis which will be considered as part of the R3 assessment in relation to channel blockage. He confirmed that this supports the position that partial blockage should be considered as a low frequency event.

Question 3 - *In ONR's recommendation No 1 in its Inspection report 029 (para 187), it stated EDF "should perform further analysis of the effects of a blockage ...in order to establish the point at which fuel clad melt temperatures would be reached". Was this done? What was the temperature?*

2.6 SH confirmed that EDF has done further analysis which has been discussed with ONR but has not yet been formally reported. The additional work demonstrates that the analysis used to support the R4 safety case is conservative and does demonstrate greater tolerance to debris.

2.7 ■ asked what temperature was reached? ■ added that if temperatures reached 2,000 degrees Celsius, it could lead to fuel melt.

2.8 SH advised that the clad temperature limit is 1350 degrees Celsius and that fuel melt would not occur at that temperature.

Question 4 - *In its Assessment report - 19-007: Return to service safety case for Reactor 4 following core inspection results in 2018 (NP/SC 7785), ONR warned that previous EDF model predictions underestimated extent of cracking and that it will require "more robust arguments" before it agreed to allow the two reactors to restart in 2020. Has ONR received these additional robust arguments re cracking?*

2.9 SH advised that he was unable to find the particular quotation referenced in the question, in the context of the extent of cracking, although he confirmed that the phrase does appear in the context of debris. SH advised that in the R3 and potentially new R4 safety case (R4 yet to be received) ONR will expect to see a conservative prediction of the extent of core cracking with significant margins to the CEDTL.

Question 5 - *In the same report, ONR stated EDF Energy did not demonstrate that "all barriers to a radiological release were preserved". Have they done so now?*

2.10 SH explained that it is the fuel clad barrier that is referred to in the assessment report. He added that whilst the intent is to preserve all barriers there will always be some uncertainty over whether a partial blockage can occur and explained it is important to understand the potential consequences of such a blockage. He confirmed that the R4 assessment had considered EDF's evidence relating to the potential consequences of localised failure of the clad and concluded that the risks of radiological release to be acceptable when assessed against ONR's risk targets. SH confirmed that the position remained unchanged.

2.11 ■ asked if fuel clad melt did occur, would it be possible for the reactor to continue in use.

- 2.12 SH advised that it would be dependent on the damage caused. DU added that minor fuel leaks are accommodated in the existing safety case for Reactor 4. He advised that if a major leak occurred this would be very different. SH confirmed that if such an event occurred, it would be very unlikely that ONR would allow the reactor to continue to operate.
- 2.13 ■ commented that it was good to receive that assurance.
- 2.14 SH added that ONR would not allow any reactor to operate if we considered a major fuel leak was likely. SH confirmed that the assessment of this issue in the last R4 safety case assessment was in line with and, complied with established ONR risk targets.

Question 6 - *In the same report, ONR expressed concern about the risk of “fuel snagging” from “multiply-cracked bricks”. Is ONR still worried?*

- 2.15 SH advised that the R4 safety case assessment concluded that the risks arising from potential fuel snagging were acceptable whether they be due to debris or multiply cracked bricks. SH confirmed that ONR would look at this issue as part of the R3 assessment, but is likely to remain acceptable given the low levels of debris and multiply cracked bricks expected.

3 ONR RESPONSES TO QUESTIONS SUBMITTED FROM RITA HOLMES

Question 1 - *We assume that the CEDTL (Current Established Damage Tolerance Level) is now 1331 (ONR Aug 2019 Assessment Report for Return-to-Service of R4 at HNB). This is nearly 50% of the 3000 bricks.*

- (a) *Can you confirm that there will be no further increase in this upper CEDTL which is supposedly a safety margin for an Operational Allowance of 700 and also no further increase in the OA itself?*
- (b) *The SSG asked HNB early February for information with regard to what EDF NGL is stating its OA to be in the R3 Safety Case. To date we have not been told. Can ONR tell us?*

- 3.1 SH confirmed that the CEDTL figure in the latest R3 safety case (SS1) is 1331. SH added that ONR had not discussed with EDF the CEDTL figure in any future safety cases that may follow the current R3 safety case (referred to as stage submission 2 (SS2)). In response to part (b) of the question, SH advised that the current HNB R3 case does not define an Operational Allowance figure. However, SH emphasised that regardless of this, ONR will still expect to see the existence of significant margins of safety between the predicted core state after 6 months operation and the CEDTL figure.
- 3.2 RH commented that EDF had not demonstrated that R3 was safe to operate with a CEDTL figure of 1331. RH asked if this CEDTL figure had been used in the R4 safety case.
- 3.3 SH confirmed that EDF will need to demonstrate that R3 is safe to operate with a CEDTL of 1331 in the safety case submission. SH also confirmed that in the R4

safety case assessed last year, the CEDTL figure was 1331. The R3 safety case will need to demonstrate that sufficient margin remains to the CEDTL.

- 3.4 RH asked should EDF submit a further safety case for Reactor 3 (SS2) would they request a higher CEDTL figure.
- 3.5 SH and DU both emphasised that EDF has to demonstrate the safety of the core in any future safety case submissions.
- 3.6 Further questions asked about the Operational Allowance in the R3 safety case. SH explained that while EDF may have chosen to move away from this, from an ONR perspective our position has not changed; we still expect to see clear and appropriate margins of safety between the predicted core state after 6 months operation and the CEDTL figure.
- 3.7 RH noted that the public would find moving away from an Operational Allowance figure difficult to understand. ■ added that it appeared that EDF were 'changing the goal posts.'
- 3.8 SH advised that EDF were changing how they present the information. He explained that he believed the driver was that EDF wanted to move away from focusing on singularly cracked bricks. He emphasised again that from an ONR perspective, we would still expect to see clear and appropriate margins of safety between the predicted core state and the CEDTL figure. SH explained that the CEDTL figure encompasses singularly cracked bricks (SCB), doubly cracked bricks (DCB) and multiply cracked bricks (MCB) but that the most important were the numbers of DCB's and MCB's.
- 3.9 RH commented that SCB were likely to lead to DCB and MCB.
- 3.10 SH agreed that SCB could lead to DCB's and possibly MCB's and that this would be discussed further under Question 12.
- 3.11 DU added that this was a complex issue and that the real concerns were around the number of DCB and MCB. He emphasised that what matters is ensuring clear and appropriate margins of safety are demonstrated between the predicted core state and CEDTL figure.

Question 2 (a) - When was the full R3 Safety Case submitted?

- 3.12 SH advised that ONR had received a verified version of the case on 23 March but that version has not yet completed EDF's Independent Nuclear Safety Assurance (INSA) process. He explained that it was ONR's understanding that the INSA process has resulted in some additional information needing to be added to the case. This will result in a revision to the safety case which will then be re-issued. He confirmed that ONR had not yet received the final version of the case. **[Post meeting note – ONR received the final R3 safety case on 15.4.20.]**

Question 2 (b) - *Does it contain all the required additional information with regard to seismic issues? Statistical experts in AGR graphite brick cracking are on record as stating "is impossible to, accurately, predict due to the variability of data".*

3.13 SH explained that we do not yet have the final version of the R3 safety case, so we are not yet in a position to know whether it address all of our concerns. In terms of being able to accurately predict the core state, SH advised that it is true to say that variability in materials properties means that it is not possible to accurately (i.e. the exact number) predict the number of cracks. SH explained that what ONR requires as a consequence, is a conservative estimate of the cracking and significant margins of safety between that and the CEDTL.

Question 2 (c) – *Does ONR agree with those experts?*

3.14 SH advised that in the context of the previous question (Q2b), ONR would agree with this statement.

Question 3 - *EDF NGL has given June 2020 as its return to service date. How long does ONR envisage an assessment and decision on the R3 Safety Case will take?*

3.15 SH confirmed that ONR will take as long as is necessary to complete the assessment of the safety case. He added that if our assessment does not identify any significant issues that need to be resolved then the June date may be achievable. DU explained that ONR was focused on getting the assessment 'right' and not getting it done quickly.

3.16 Sean Morris (SM) asked if ONR had adequate staffing levels to undertake the assessment given the Covid-19 outbreak.

3.17 SH advised that members of the assessment team where currently working at home, so didn't currently have concerns. However, he acknowledged that there are risks to delays given the current situation. DU also added that steps have been taken by ONR to bring specialists back into the assessment team to build up the capacity of the team.

Question 4 - *When must EDF NGL submit the revised Safety case for R4 Return-to-Service?*

3.18 SH confirmed that ONR has not agreed a date with EDF for them to submit the R4 return to service safety case. SH added that such a case is likely to be very similar to the R3 case and if ONR were to agree the R3 return to service safety case, it is likely that we would agree the Reactor 4 case, as well.

Question 5 - *Does ONR share the view, held by many people locally that it would cause fear and further anxiety to an already stressed populace to restart HNB reactor/s during the Covid19 crisis; when there is already concern regarding low staff morale, potential staff illness and absences?*

3.19 SH confirmed that ONR would only allow the return to service of R3 if it is safe to do so. He confirmed that our decision would not only take into account the graphite safety case but all aspects that could affect safe operation. He added that this would

include ensuring there is sufficient staff available to operate the power station.

- 3.20 ■ emphasised that people were very worried about the situation regarding COVID-19.
- 3.21 DU explained (in relation to COVID-19) that BEIS has determined that it is essential that EDF keep its reactors generating electricity. In relation to HNB, DU confirmed that EDF has taken comprehensive measures to maintain the safety of its workforce. He noted that HNB currently has one of the lowest absence rates with only 6% of staff not available to work.
- 3.22 ■ commented that he felt the wrong signal would be sent if reactor(s) returned to service, adding it could end up in a judicial review.

Question 6 - *When can we see the details of the latest results from the core inspection of R4 over the period from 10th Dec 2019 when it was taken offline?*

- 3.23 SH advised that inspection results from HNB R4 are still being analysed by EDF and have not yet been formally reported. However, SH did confirm that provisional results indicated levels of cracking that were, as would be expected, within safety case limits. SH added he would be happy to share results once they had been formally reported to ONR.

Action 20/01 – SH to share results with IF, RH, SM once they have been formally reported to ONR.

- 3.24 ■ commented that EDF may believe that the number of SCB is not important, but that he did not share this view. He added that he did not like it when EDF seek to minimise large numbers of SCB and that SCB can lead to DCB or MCB.
- 3.25 SH confirmed that numbers of SCB would continue to be reported and that ONR would continue to look at this issue.

Question 7 - *I already asked during our meeting in February about end of life criteria that EDF (PSR page 14 para 28 Feb 2017) was asked to supply to ONR. PSR page 27 “NGL should determine end-of-life criteria for the reactors. This is likely to include measures of core distortion as well as numbers and morphology of cracks.” It is now 2020. Has it now been provided to ONR? If it has, what are these end-of-life criteria?*

- 3.26 SH confirmed that there have been some recent discussions with EDF on the end of life safety case (SS2) for HNB. He confirmed that should we reach that stage, ONR would still require the safety case submissions to demonstrate that all control rods could enter the core in a seismic event and that the secondary shutdown systems would remain operational during such an event. SH also explained that in any future SS2 submission, EDF would be likely to introduce friction into the modelling. He advised that friction is not currently included in the modelling which is a conservative position.
- 3.27 RH commented that it was very complex. RH asked if friction is introduced into modelling, could that allow further operation. RH commented that implications could

be catastrophic if things go wrong.

- 3.28 SH advised that any potential SS2 case would require significant assessment. He added that the inclusion by EDF of friction into its modelling would not, in his view, be an unreasonable thing for them to do. DU confirmed that if a future case is received which incorporates friction into the modelling ONR would look at the way it had been considered. DU emphasised that any future case would need to ensure that appropriate safety margins are maintained.

Question 8 - *Is EDF claiming that the fragments which become detached are somehow size reduced to such a small size that the debris migrates through the system and leaves no obvious trace anywhere and is ONR convinced this is so?*

- 3.29 SH advised that, currently, the amount and size of debris being generated is relatively small. He added that given no debris has been found in the catch pots, debris is most likely to have passed up the channel (gas flow is high and the debris small enough) and entered the outlet chamber above the gas baffle where it will either have settled or passed into the boiler region.

Question 9 - *How many pieces of debris have been found in the catch pots or grid in either reactor to date and what size are these?*

- 3.30 SH advised that to date, no pieces of debris have been found in the catch pots or grid in either reactor.

Question 10 - *Do we have to wait for the Assessment Reports for Return-to-Service or can we have a breakdown of the current state of each reactor core with regards to the total number of actual single cracks, double cracks, and multiple cracks in each reactor as well as the width of each crack? Can we have the predicted increase in these cracks over the next quarter year of operation or relevant period?*

- 3.31 SH advised that the final information will be included in our Assessment Reports. SH explained that we have not yet received the final inspection results following the previous operation of R4, and that ONR will need to properly understand and assess the core states in the context of the safety case.

Question 11 - *With regard to sleeve gapping, how can the effect of this on necessary gas flow for cooling and moderation be accurately evaluated given there are so many existing and potential variables?*

- 3.32 SH advised that the effect on cooling was considered thoroughly in the R4 assessment. A conservative analysis gave a sleeve gap of <2mm which would result in an increase in clad temperature of <30deg C. This was against a margin to the fuel clad temperature limit of ~100degC. He explained that sleeve gapping does not have a significant effect on moderation.

Question 12 - *EDF and ONR have both stated that the number of cracked bricks in itself is not important to safety of the reactor. Indeed HNB/EDF has said that all the bricks could be cracked and it would still be safe. This is based on the concrete encasement vessel and restraints being in good condition. Where is the proof that these important parts are in good condition?*

The number of cracked bricks is of great concern to many people despite what is stated by EDF and ONR to the contrary. They find it difficult to believe that the very extensive cracking – presenting almost half an inch wide and full height top to bottom, three or more of in individual bricks - would not impact the structural integrity of the reactor core and the efficiency of both the neutron bombardment and the cooling process.

- 3.33 SH explained that singly cracked bricks with small crack openings do not have significant implications in themselves. He confirmed that cracks with large openings, or DCB or MCB are potentially significant, if present in sufficient numbers. SH added that SCB could form DCB or MCB during a seismic event and that this would be a significant focus for our assessment of the R3 safety case (SS1). SH confirmed that there are no significant implications to reactor physics or fuel cooling caused by cracks in the graphite bricks, advising that this had been considered in detail in the R4 safety case assessment. He also added that the concrete pressure vessel surrounding each reactor was subject to rigorous assessments at each reactor outage.
- 3.34 ■ expressed concern, likening the situation to ‘driving down a motorway in an old car with failing brakes, relying solely on the handbrake to bring the car to a standstill.’
- 3.35 DU disagreed with this statement. He explained that at every outage, the key containment systems are assessed and demonstrated to be fit for purpose for the subsequent period of operation. DU also noted the recent Topical Peer Review of reactor ageing management. SH undertook to provide a link to this. [**Post meeting note:** Action completed by SH on 8.4.20]

Question 13 - *There was some question over end face brick plates and their current ability to fulfil function. Can you better explain the function and the perceived state of these? Can they be viewed and assessed accurately or is it predicted assessment?*

- 3.36 SH explained that this is understood to relate to end-face key strength. He advised that the bottom/top of graphite bricks are keyed together. During a seismic event the keys have a potential to fail and this is included in the modelling. If large numbers of keys were to fail it results in increased channel distortion. As the graphite is irradiated it gets weaker and this becomes more of an issue. SH confirmed that this is an area which ONR will be focusing on during our assessment of the R3 safety case.
- 3.37 ■ asked if ONR is engaging the use of expert geologists, and if so, who are these?
- 3.38 SH confirmed that previous assessments and current assessments will involve the use of specialised civil engineers and external hazard specialists. DU added that there was a large body of reliable geological information across the UK, which ONR’s external hazard specialists can access and draw upon.

4 ONR RESPONSES TO QUESTIONS SUBMITTED FROM SEAN MORRIS

Question 1 - *Officers in North Ayrshire Council are implementing the new offsite emergency plan for the Hunterston site. This report was taken to the Council’s Cabinet, but they passed it on for full discussion at a planned meeting of the Full Council on the 25th March. Due to the Covid-19 outbreak, this meeting was cancelled, and the decision*

delegated to the Chief Executive with no discussion. There was considerable local concern about a small reduction in the DEPZ and the lack of pro-active measures such as pre-distribution of iodine tablets to the 30kms area. With the lack of democratic discussion in this area (and I would imagine for other sites putting in place updated REPPIR plans), how will ONR validate and determine these plans?

- 4.1 SH confirmed that ONR does intend sampling a number of sites to gain assurance on how REPPIR19 has been implemented. He added that HNB may be one of the sites sampled, but was unable to confirm presently if that would be the case or not.
- 4.2 RH commented that responsibility for REPPIR 2019 had been given to the North Ayrshire Council (NAC) Chief Executive Officer and not the cabinet. SM added that discussions had not yet taken place between NAC members and the NAC cabinet. SM expressed concern that the NAC Chief Executive Officer may not be hearing the concerns of the wider council. Also concerned that due process had not been followed.
- 4.3 DU advised that he was not aware of the specific details, but that it appeared that the decision had been delegated from council to the chief executive.

Question 2 - *What is the status of the ONR / SEPA investigation of a transport flask from Hunterston to Sellafield having radioactive graphite debris still within it?*

- 4.4 SH explained that the material found was dust/debris from the graphite fuel sleeves and not graphite fuel channel bricks. He advised that from a nuclear safety perspective this is not a significant issue as the transport flasks are justified for the transport of spent fuel. However, SH added that the environmental permit does not allow the station to receive waste of this nature. He explained that this was a matter for the Scottish Environmental Protection Agency (SEPA) and was not something ONR was investigating.
- 4.5 ■ commented that the existence of graphite debris flags up the issue that fuel elements are damaged.
- 4.6 SH disagreed. He emphasised that ONR did not view this as a significant nuclear safety issue. DU added that this did not imply that the fuel containment had been compromised, and that the specific matter was very much under the regulatory vires of SEPA.

Question 3 - *Whilst we are concerned with Hunterston, there is also a long-term closure in place at Dungeness, and we are keen to hear about progress there with the corrosion of pipes and aging of the site. What is the timeline for it reopening? Also what are the impacts of lessons learned from Hunterston B in the other AGR sites and similar problems?*

- 4.7 SH confirmed that good progress has been made in addressing the corrosion issues at Dungeness B (DNB) with large sums of money being invested in new equipment by EDF. He explained that the position at Dungeness B arose out of a fleet wide intervention by ONR on corrosion. All other stations (including HNB) responded well to the intervention but, at the time, Dungeness B did not. This resulted in ONR

issuing a Direction to EDF which resulted in the necessary improvements being delivered.

- 4.8 SM asked if there were any lessons from HNB that could be applied to other sites. SH explained that the design and operating life meant that DNB didn't have issues with graphite cracking. He explained that other sites were preparing separate graphite related safety cases which ONR would assess.
- 4.9 DU thanked ■ RH and SM for joining the call and for submitting questions in advance, which had helped both SH and himself prepare for the call. He also added that, in future, ONR would look to see if videoconferencing might be available.
- 4.10 ■, RH, SM thanked DU and SH for taking the time to speak with them.

Post meeting note – ONR expressed thanks to Sean Morris for his assistance in preparing the minutes of the meeting.