



This form will report compliance with your permit as determined by an Environment Agency officer

Site	Hinkley Point C Power Station	Site Ref	HPC
Operator	NNB Generation Company (HPC) Limited	Permit Ref	EPR/ZP3690SY
Date of assessment	08 December 2021	National Security Direction?	No
What parts of the permit were assessed	2. Operations, 3. Disposals of radioactive waste and monitoring		
Assessment	Report Review	Activity:	Nuclear Licensed Site
Recipient's name/position	Environmental Technical Manager		
Officer/s name	██████████	Date issued & delivery method	26 May 2022 Email

Section 1 - Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our [Compliance Classification Scheme](#) (CCS). CCS scores can be consolidated or suspended, where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your [local office](#).

Permit Conditions and Compliance Summary			Condition(s) breached
a) Permitted activities	1. Specified by permit	A	None identified
b) Infrastructure	1. Engineering for prevention & control of pollution	A	None identified
	2. Closure & decommissioning	N	
	3. Site drainage engineering (clean & foul)	N	
	4. Containment of stored materials	A	None identified
	5. Plant and equipment	A	None identified
c) General management	1. Staff competency/ training	N	
	2. Management system & operating procedures	N	
	3. Materials acceptance	N	
	4. Storage handling, labelling, segregation	A	None identified
d) Incident management	1. Site security	N	
	2. Accident, emergency & incident planning	N	
e) Emissions	1. Air	A	None identified
	2. Land & Groundwater	N	
	3. Surface water	N	
	4. Sewer	N	
	5. Waste	A	None identified
f) Amenity	1 to 5	N/A	
g) Monitoring and records, maintenance and reporting	1. Monitoring of emissions & environment	N	
	2. Records of activity, site diary, journal & events	N	
	3. Maintenance records	N	
	4. Reporting & notification	N	
h) Resource efficiency	1. Efficient use of raw materials	N	
	2. Energy	N/A	

KEY: C1, C2, C3, C4 = CCS breach category (* suspended scores are marked with an asterisk), A = Assessed (no evidence of non-compliance), N = Not assessed, NA = Not Applicable

Number of breaches recorded	0
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If the number of breaches is greater than zero, then please see Section 3 for details of our proposed enforcement response



Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- the part(s) of the permit that were assessed (e.g. maintenance, training, combustion plant, etc)
- where the type of assessment was 'Data Review', details of the report/results triggering the assessment
- any non-compliances identified
- any non-compliances with exemption conditions
- details of any multiple non-compliances
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

The strategy for spent fuel management at Hinkley Point C (HPC) is to store the fuel on-site pending the availability of a Geological Disposal Facility (GDF). Fuel removed from the reactor will be cooled underwater in a reactor fuel pond for up to 10 years. Following this initial storage period in the reactor fuel pond, the spent fuel will be transferred to a separate Interim Spent Fuel Store (ISFS) where it can be safely stored until the fuel is sufficiently cooled and a UK GDF is available for final disposal.

During the Generic Design Assessment for the UK EPR (the reactor type to be built at HPC) we assessed dry and wet interim fuel storage options. Dry storage primarily cools the fuel through convection and uses air as the cooling medium. Wet storage submerges the fuel in a pond which is cooled through active mechanical cooling systems and the use of water as the cooling medium. We considered that the submissions had demonstrated that all the options proposed represented Best Available Techniques (BAT) in minimising discharges and protecting the environment.

During the development of the HPC design, NNB Generation Company (HPC) Limited ('NNBHPC' hereafter) determined that both wet and dry interim storage options represented BAT. At the time of the application for its environmental permits, NNBHPC based its submission on a design including wet interim storage of spent fuel. The subsequent granting of the radioactive substances permit EPR/ZP3690SY was therefore based on this information. As the concept design was developed, and using operational experience from the UK, NNBHPC revisited its storage option decision. A workshop in 2014 resulted in a revised strategic Multi Attribute Decision Analysis (MADA), formally issued in 2017, which based on the additional information found preference for dry interim storage. NNBHPC therefore decided to move from wet to dry interim storage of spent nuclear fuel at HPC. NNBHPC previously shared this MADA document (100773686) with us. Such a change would require an amendment to the permit EPR/ZP3690SY, and NNBHPC intends to apply to vary its permit in due course. NNBHPC recently produced an RWA Advice Note (100944952) summarising its current position with respect to the dry store at HPC, and the impact on the RSR permit. The note provides a summary of the regulatory engagement to date, and the options for next steps in relation to timing of any permit variation.

This report details our assessment of the implications of the change on our original permit determination, and the statements we made in our decision document, which is available at:

<https://www.gov.uk/government/publications/hinkley-point-decisions-on-environmental-permit-applications-for-a-proposed-new-nuclear-power-station>.

We assess whether the information provided by NNBHPC demonstrates that spent fuel will continue to be managed in a way that will not prejudice its ultimate disposal and will ensure the environment and people are protected.

Impact on the Decision Document for EPR/ZP3690SY

Section 4.5.3 Using BAT to minimise the discharges of gaseous and aqueous radioactive waste

269 We will also need to check the similar specification for the interim spent fuel storage facility. As this will be at a later time than the fuel pool, we have included this issue as requirement IC 14 in table S1.2 of Schedule 1 of the permit.

We included an information condition (IC14) in the permit for NNBHPC to provide us with its specification for the operational management of the Interim Spent Fuel Store (including temperature, ventilation and chemistry control), together with a demonstration of how this contributes to the use of BAT to minimise the



activity in discharges (addressing, in particular, the maintenance of fuel integrity and the minimisation of the discharge of tritium to air), to be completed six months before operation of relevant plant.

As there is no longer a need to consider evaporative losses and pool water chemistry, IC14 is no longer directly applicable. We will expect NNBHPC to provide us with a specification for the operational management for the dry ISFS in due course. We will assess the suitability of this specification as part of our routine regulation. NNBHPC may choose to apply to remove IC14 from its permit as part of its application to vary its permit. We will confirm and record any decision as part of our determination of any variation.

Section 4.6.2 Systems for discharge of gaseous radioactive waste to the environment

314 Another source is the ventilation system of the interim spent fuel store. NNB GenCo has not completed the detailed design of this facility, but it expects HEPA filters to be used in the ventilation system. We consider this to be an important issue and we have included a pre-operational measure (POM 1) in the permit to install filtration to the HEPA standard. The contribution of the facility to the site discharge is shown in a table in section 5.2.1 of the application and is close to 5% of site limits. We consider that the amount of radioactivity predicted to be discharged from this stack and the quantities of radioactivity stored in the facility require this outlet to be considered as a major outlet. The stack for this system is outlet A3 in Schedule 3 of the permit.

NNBHPC has informed us that the proposed dry ISFS design will not require or include an active ventilation system and authorised disposal outlet. As the fuel casks to be used will be sealed, it is not expected that any radioactive gaseous discharge will result from the ISFS building. As a result, NNBHPC will need to apply to vary its permit to remove *Disposal Outlet A3 – Interim Spent Fuel Store Stack*, and pre-operational condition *POM1 - Discharge of gaseous radioactive waste from the Interim Spent Fuel Store: Install filtration to HEPA standard (NVF/DG001 and BS EN1822:2009) in the ventilation system of the Interim Spent Fuel Store.*

Section 4.6.5 Carbon-14

377 ...NNB GenCo, therefore, proposed 1.4 TBq y⁻¹ as the limit, to also include minor contributions from the 'aeroball' system, the reactor pit atmosphere and the interim spent fuel store.

378 We assessed the prediction and the contingencies and accept these as reasonable. We accept the NNB GenCo proposal for a 12-rolling-month limit for gaseous discharges of carbon-14 of 1.4 TBq y⁻¹.

This refers to the annual gaseous discharge limit for carbon-14. NNBHPC does not expect that any radioactive gaseous discharge will result from the proposed dry ISFS, however, there may be an increase in discharges associated with fuel handing and processing before it arrives at the ISFS. As the contribution of total carbon-14 from the ISFS was minor, we do not currently intend to change the annual gaseous limit for carbon-14.

Section 4.6.8 Other fission and activation products

424 Caesium-137 - NNB GenCo proposed a limit for this radionuclide of 1.9 GBq y⁻¹ based on expected best performance of 0.114 GBq y⁻¹.

425 NNB GenCo said that the interim spent fuel store will contribute 0.021 GBq y⁻¹ to the caesium-137, but this should be accommodated within a limit based on 9.5% of the maximum proposed for other fission and activation products in GDA (20 GBq y⁻¹).

This refers to the annual aqueous discharge limit for caesium-137. At GDA, we proposed an annual limit for one UK EPR of 0.5 GBq. As HPC consists of two UK EPR units, this would lead to a limit of 1 GBq, but we considered that the additional information NNBHPC provided in the application based on PWR operational experience justifies a limit of 1.9 GBq. As NNBHPC does not expect that any radioactive aqueous discharge will result from the proposed dry ISFS, a contribution of caesium-137 would be removed. However, as the contribution of 0.021 GBq y⁻¹ is negligible against the limit of 1.9 GBq y⁻¹, we do not currently intend to



change the annual aqueous limit for caesium-137. There may also be an increase in discharges associated with fuel handling and processing before it arrives at the ISFS.

427 Other radionuclides - NNB GenCo said that the maximum discharge at Hinkley Point C of 'other fission and activation products' will be twice the maximum quoted at GDA (that is 20 GBq) less the caesium-137 value above, but with a contribution from the interim spent fuel store of 1.7 GBq y⁻¹, which they say is 18.1 GBq y⁻¹. It also proposed this value as a 12-rolling-month limit. We note that NNB GenCo did not add in the 1.7 GBq for the fuel store.

This refers to the annual aqueous discharge limit for 'other radionuclides'. As NNBHPC does not expect that any radioactive aqueous discharge will result from the proposed dry ISFS, a significant contribution of other radionuclides will be removed. However, as this contribution was not added when setting the discharge limit, there is no change to the annual aqueous discharge limit for 'other radionuclides'.

438 We have set an annual limit of 120 MBq. This is based on double our proposed GDA limit for Hinkley Point C, with an allowance for discharges from the interim spent fuel store.

This refers to the annual gaseous limit for beta-emitting radionuclides associated with particulate matter. At GDA, we proposed an annual limit for one UK EPR of 50 MBq. As HPC consists of two UK EPR units, we calculated the limit as 100 MBq, plus a 20 MBq allowance for the wet ISFS. Whilst NNBHPC does not expect that any radioactive gaseous discharge will result from the proposed dry ISFS, there may be an increase in discharges associated with fuel handling and processing before it arrives at the ISFS. NNBHPC has contracted the company HOLTEC to undertake the design of the dry storage system for HPC. The Environmental Design Summary (EDS) produced by HOLTEC was shared with us (100292159). The EDS highlights that there will be some additional discharges resulting from the fuel loading process, including drying process, which was not accounted for in the wet store transfer process. This would support no change being required to the existing permit discharge limits. NNBHPC will confirm its intent regarding permit limits in its variation application, and we will confirm and record any decision as part of our determination of any variation. It remains that for all discharges from the HPC site, including any from the ISFS and associated fuel handling and processing, BAT must be applied.

Dose assessment

As part of our permit determination, we assessed the dose to the theoretical representative person who would be most exposed to discharges, including an allowance for direct radiation from site. For discharges at the permit limits, the annual dose for HPC would be 8.4 µSv, and the combined maximum impact of Hinkley Point A, B and C sites as 43 µSv. Both these doses are significantly less than the legal dose limit for the public of 1000 µSv a year and less than UK dose constraints. As there is no proposed change to aqueous or gaseous discharge limits, there is no impact on the associated dose. Whilst the direct radiation (including sky-shine) may be higher from a dry ISFS, NNBHPC has estimated the external dose rate to be negligible, and not to impact on the dose to the theoretical representative person.

NNBHPC management of change

NNBHPC must manage the proposed change to ensure any impacts on the wider design and operations are understood and addressed, as well as any implications on safety or environmental protection. NNBHPC has begun making some of the associated design modifications that will be required to implement a dry ISFS. These include consequence on ancillary buildings (NNBCENG0012UK) and the required changes to the fuel building (CGCA5019UK). NNBHPC has managed these changes through its design modification process, and these were presented to us as part of our routine regulatory engagements.

The change will need to be reflected across NNBHPC's management system and strategies and incorporated into its arrangements. In its RWA Advice Note, NNBHPC summarises these changes and how they will be managed. NNBHPC recently updated its Integrated Waste Strategy (IWS) for HPC to version 4. The IWS reflects the dry ISFS and the associated waste and its strategy. We carried out a review of this version of the IWS and found it to represent BAT and in line with our expectations. The RWA Advice Note details other updates that will be required, including to the Environment Case, Environmental Protection



Function (EPF) register, Radioactive Waste Management Case, and Decommissioning Waste Management Plan. These will be incorporated into future updates of these documents.

Conclusion

Given that the change from wet to dry ISFS does not lead to an increase in radioactive discharges, we find the change to be acceptable and the dry ISFS option being pursued by NNBHPC to represent BAT. We do not find that the change significantly impacts any of the decisions made in our original permit determination for EPR/ZP3690SY, however NNBHPC will need to apply to make minor variations to its permit in due course. The RWA Advice Note produced by NNBHPC sets out the options for next steps in relation to timing of any permit variation. We find the note to provide evidence of NNBHPC exercising its Corporate RWA capability and Intelligent Customer capability in relation to implications of design changes on its permit. From the information provided, NNBHPC's approach to spent fuel management will not prejudice its ultimate disposal. It is an ongoing requirement of the permit that BAT must be applied to all discharges from the HPC site, including any from the ISFS and associated fuel handling and processing. We will continue to assess the overall impact of spent fuel management at HPC to ensure the minimisation of discharges and the application of BAT.

Section 3- Enforcement Response

Only one of the boxes below should be ticked

You must take immediate action to rectify any non-compliance and prevent repetition. Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.

In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.

We will now consider what enforcement action is appropriate and notify you, referencing this form.

Section 4- Action(s)

Where non-compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.

Criteria Ref.	CCS Category	Action Required/Advised	Due Date
See Section 1 above			

CCS record number

Section 5 - Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- advise on corrective actions verbally or in writing
- require you to take specific actions in writing
- issue a notice
- require you to review your procedures or management system
- change some of the conditions of your permit
- decide to undertake a full review of your permit

Section 6 – General Information

Data protection notice

The information on this form will be processed by the Environment Agency to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). The Environment Agency may also use and/or disclose it in connection with:

- offering/providing you with its literature/services relating to environmental matters



Any breach of a permit condition is an offence and we may take legal action against you.

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and or suspension or revocation of the permit.

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- ensure you comply with other legislative provisions which may apply.

Non-compliance categories

CCS category	Description
C1	A non-compliance which could have a major environmental effect
C2	A non-compliance which could have a significant environmental effect
C3	A non-compliance which could have a minor environmental effect
C4	A non-compliance which has no potential environmental effect

Operational Risk Appraisal (Opra) – Non-compliances do not currently affect RSR Opra scores.

- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

The Environment Agency may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The Environment Agency will provide a copy of this report to the public register(s), subject to any national security requirements. However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within twenty working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with the officer's line managers. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 03708 506 506 (Mon to Fri 08.00–18.00) and ask for the Customer Contact team or send an email to enquiries@environment-agency.gov.uk. If you are still dissatisfied, you can make a complaint to the Ombudsman. For advice on how to complain to the [Parliamentary and Health Service Ombudsman](#) phone their helpline on 0345 015 4033.