

**EDF Energy Nuclear Generation Limited, Approval of Emergency Plan  
Approval of Amended Dungeness B Nuclear Licensed Site Emergency Plan**

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## EXECUTIVE SUMMARY

### Approval of Amended Dungeness B Nuclear Licensed Site Emergency Plan

#### Permission Requested

EDF Energy Nuclear Generation Limited (NGL) the operator and licensee of Dungeness B nuclear power station, has written to the Office for Nuclear Regulation (ONR) requesting the Approval of the amended Dungeness B Nuclear Power Station Emergency Plan. The request is in accordance with Licence Condition (LC) 11(3): Emergency arrangements.

#### Background

The emergency plan at Dungeness B is approved by ONR under LC 11(2) and any amendments must be approved in accordance with LC 11(3).

Dungeness B has not generated electricity since September 2018, when it was shutdown for maintenance. In June 2021, NGL announced that electricity generation at Dungeness B would not be restarted and would move into defuelling operations with immediate effect. As a result, there is a significant reduction in the radioactive risk arising from Iodine 131 and NGL no longer considers administering stable iodine tablets as a required protective action for DNB and proposes to withdraw them from the site and residents in the Detailed Emergency Planning Zone (DEPZ).

#### Assessment and inspection work carried out by ONR in consideration of this request

ONR has reviewed NGL's justification for withdrawing the administration of stable iodine tablets from the Dungeness B emergency plan. The review was supported by advice from ONR Radiological Protection specialist inspectors.

#### Matters arising from ONR's work

No issues preventing issue of this Licence Instrument arose from the assessment of the amended DNB emergency plan by ONR.

#### Conclusions

ONR is satisfied that the removal of administering stable iodine tablets from the Dungeness B emergency plan is appropriate given that the station has not generated electricity since September 2018 and will not be restarted. The risk from Iodine 131 is therefore negligible and ONR are content that the changes to the emergency plan will not undermine the Dungeness B emergency response.

#### Recommendation

I recommend ONR issues Licence Instrument 567 under LC 11(3) for Nuclear Site Licence 61, giving ONR's Approval of the Dungeness B emergency plan (DNB/EMPREP/001, Rev 017).

## LIST OF ABBREVIATIONS

DEPZ	Detailed Emergency Planning Zone
DNB	Dungeness B
EA	Environment Agency
EAN	Engineering Advice Note
LC	Licence Condition
LI	Licence Instrument
NGL	EDF Energy Nuclear Generation Limited
NISR	Nuclear Industries Security Regulations 2003 as amended in 2006
ONR	Office for Nuclear Regulation
OSNE	Off-Site Nuclear Emergency
PHE	Public Health England
RP	Radiation Protection
UKHSA	UK Health Security Agency

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## **1 PERMISSION REQUESTED**

1. EDF Energy Nuclear Generation Limited (NGL) the operator and licensee of Dungeness B (DNB) nuclear power station, has written (Ref. 1) to the Office for Nuclear Regulation (ONR) requesting the Approval of the amended Dungeness B Nuclear Power Station Emergency Plan. The request is in accordance with Licence Condition (LC) 11(3): Emergency arrangements.

## **2 BACKGROUND**

2. Licence Condition 11(1) requires the licensee to “make and implement adequate arrangements for dealing with any accident or emergency arising on the site and their effects”. Dungeness B has an existing emergency plan, which is a standalone document containing the principles for emergency preparedness and response. Detailed arrangements are described in the licensee’s emergency handbook, which is a tier 2 document and based on the principles in the emergency plan. As well as meeting the requirements for site licence compliance, the plan and handbook also form the arrangements for compliance with:
  - Radiation Emergency Preparedness and Public Information Regulations 2019
  - Nuclear Industries Security Regulations 2003 as amended in 2006
3. The emergency plan for DNB was approved by ONR under LC 11(2) and any amendments must be approved in accordance with LC 11(3). The existing DNB emergency plan (Ref. 2) was approved (LI 562) in November 2020.
4. DNB has not generated electricity since September 2018, when it was shutdown for maintenance. In June 2021, NGL announced that electricity generation at DNB would not be restarted and would move into defuelling operations with immediate effect.
5. The existing emergency plan includes the provision to issue stable iodine tablets on-site and to the public residing within the Detailed Emergency Planning Zone (DEPZ) surrounding DNB as a countermeasure for a potential release of radioactive Iodine 131 during an Off-Site Nuclear Emergency (OSNE).
6. The amendment of the DNB emergency plan has been made on the basis that there is a change in the radioactive risk arising from the station owing to the end of electricity generation. As a result, NGL no longer considers administering stable iodine tablets is a required protective action for DNB and proposes to withdraw them from the site and residents in the Detailed Emergency Planning Zone (DEPZ).
7. Under LC 11(3), the licensee can only implement a new emergency plan after receiving ONR’s approval. To implement the withdrawal of the stable iodine

tablets DNB has amended the emergency plan and written to ONR requesting its approval.

### **3 ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST**

8. I have considered NGL's request for ONR to Approve the amended DNB emergency plan accordance with ONR Guidance (Ref. 3 and 4) and the REPIR 19 Approved Code of Practice (Ref. 5). To inform my recommendation to approve the DNB emergency plan I have reviewed the Engineering Advice Note (EAN) (Ref. 6), which justifies not re-issuing stable iodine tablets to the public in the DNB DEPZ and the changes made between the existing and amended DNB emergency plans (Ref. 2, 1). In addition, I have taken advice from ONR Radiological Protection (RP) specialist inspectors.
9. The key amendment to the emergency plan is the removal of the administration of stable iodine tablets from the predetermined protection action advice and as a protective action to be considered on and off-site.
10. In addition, the dose threshold to advise the Police of the need to implement protective actions for all persons exposed in the affected areas has been changed to 30 mSv from an effective dose to the thyroid of 300mSv (the UKHSA-CRCE lower Emergency Reference Level for evacuation). The plan has also been amended to refer to UK Health Security Agency (UKHSA) (previously Public Health England (PHE)) and the Shepway Primary Care Trust to Kent County Council.
11. There is no immediate change to the extent of the existing DEPZ, the existing minimum technical distances for the purposes of emergency planning are retained, with advice to shelter indoors in the event of an OSNE.
12. The EAN presents a justification for removing the administration of stable iodine tablets as a protective measure because of the diminishing risk from the reactor core inventory of radioactive iodine 131 as it decays.
13. Radioiodine accounts for approximately 90% of the total radioactive dose that could be experienced by an unprotected person in the vicinity of an off-site nuclear emergency. The primary urgent protective measure for an operating reactor is the administration of stable iodine tablets. These flood the body with stable iodine, which prevents the uptake of radioiodine and hence protects the person from the harmful radiological dose.
14. Insignificant quantities of radioiodine are produced by a nuclear reactor while it is shutdown and not at power. Furthermore, the inventory of radioiodine present in a reactor core reduces with time as it decays to stable isotopes that present no radioactive risk. Iodine-131 is the most significant isotope for emergency planning purposes and also has the longest radioactive half-life of the key iodine isotopes (8 days). Hence, since the DNB reactors last operated

at full power, the total core inventory of iodine-131 will have reduced exponentially and NGL considers that the present risk to the public from a release of radioiodine is negligible. Therefore, NGL no longer considers administering stable iodine tablets as an effective countermeasure for DNB.

15. The ONR RP inspector (Ref. 7) agrees that radioiodine will have decayed to insignificant levels for all isotopes. The RP inspector notes that there is long lived I-129, relevant to radioactive waste long term handling, but the inventory of this is low enough in waste not to require issuing stable iodine tablets, or consideration at all for emergency planning. (Ref: Table A-15 of IAEA: NW-T-1.18).
16. An ONR RP inspector (Ref. 7) has reviewed the amended emergency plan and is supportive of the decision on the basis that the reactors have been shut down for more than three years and so the radioiodine inventory in any irradiated fuel on site will be negligible, removing the need to distribute stable iodine.
17. I have confirmed the licensee's Nuclear Safety Committee were advised (Ref, 8) of the generic changes to the emergency arrangements for defuelling stations and had no comments.
18. Before recommending approval it is established practice to notify other competent regulatory authorities of ONR's intention to ensure there are no specific objections that may compromise other regulatory requirements. The DNB Environment Agency (EA) site inspector was informed that ONR intended to issue an LI giving its approval of the amended emergency plan and confirmed that they had no objections (Ref. 9).

#### **4 MATTERS ARISING FROM ONR'S WORK**

19. No issues preventing issue of this Licence Instrument arose from the assessment of the amended DNB emergency plan by ONR.

#### **5 CONCLUSIONS**

20. ONR has assessed NGL's amended emergency plan for DNB. The reason for the amendment is primarily to remove the requirement to administer stable iodine as a countermeasure for a potential off-site nuclear emergency.
21. Based on the work carried out by ONR, I am satisfied that the removal of administering stable iodine tablets from the DNB emergency plan is appropriate given that the station has not generated electricity since September 2018 and will not be restarted. I am also content that the changes to the emergency plan will not undermine DNB's emergency response.



## **6 RECOMMENDATIONS**

22. I recommend ONR issues Licence Instrument 567 under LC 11(3) for Nuclear Site Licence 61, giving ONR's Approval of the DNB emergency plan (DNB/EMPREP/001 Rev 017).

## 7 REFERENCES

1. EDF - DNB50102R - Approval of the Document Titled Dungeness B Nuclear Power Station Emergency Plan - DNB/EMPREP/001 Rev 017 - 25 November 2021. CM9 2021/86076.
2. EDF - DNB50991R - Approval of the Document Titled Dungeness B Power Station Emergency Plan-DNB/EMPREP/001-Revision 016 - 15 September 2020. CM9 2020/291435.
3. ONR Guide – The Purpose and Use of Permissioning - NS-PER-GD-001 Revision 4. March 2020.  
<http://www.onr.org.uk/operational/assessment/index.htm>
4. ONR Nuclear Safety Technical Inspection Guide – LC 11 Emergency Arrangements - NS-INSP-GD-011 Revision 7.1, March 2021.  
[http://www.onr.org.uk/operational/tech\\_insp\\_guides/index.htm](http://www.onr.org.uk/operational/tech_insp_guides/index.htm)
5. Approved Code of Practice and Guidance For The Radiation (Emergency Preparedness and Public Information) Regulations 2019,  
<http://www.onr.org.uk/documents/2019/reppir-19-acop-and-guidance.pdf>
6. E/EAN/BCHB/0002/DNB/21 - Justification for not re-issuing Stable Iodine Tablets to the Public in the Dungeness B Detailed Emergency Planning Zone. CM9 2021/89813.
7. E-mail correspondence with ONR RP inspector, 2021/91196 and 2021/91198.
8. EDF - NSC Minutes - Nov 2021. CM9 2021/89814.
9. EA - Dungeness B - Approval of Emergency Plan - Notice of No Objection. CM9 2021/89815.