



**Determination of the Requirement for Off-site Emergency Planning and Prior Information Areas for the Berkeley Nuclear Licensed Site: Radiation (Emergency Preparedness and Public Information) Regulations 2001**

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## EXECUTIVE SUMMARY

### Determination of the Requirement for Off-site Emergency Planning and Prior Information Areas for the Berkeley Nuclear Licensed Site: Radiation (Emergency Preparedness and Public Information) Regulations 2001

The Office for Nuclear Regulation (ONR) is responsible for regulating Great Britain's nuclear licensed sites in order to protect the health and safety of employees and the public against risks of harm arising from ionising radiations. ONR's responsibilities include a legal duty, where it is concluded that there is a potential for a reasonably foreseeable radiation emergency (as defined in the Radiation (Emergency Preparedness and Public Information) Regulations (REPPiR) 2001, to determine an off-site emergency planning area<sup>1</sup> (i.e. the area within which, in ONR's opinion, any member of the public is likely to be affected by such an emergency). In these cases, there is also a legal duty, under the same Regulations, for ONR to determine an area<sup>2</sup> within which prior information is to be distributed to the public. A radiation emergency is defined in REPPiR as an event where a person off-site is likely to receive a radiation dose in excess of the thresholds in REPPiR, typically an effective dose in excess of 5 milliSieverts (mSv) in the following 12 months. It therefore constitutes an important component of the United Kingdom's overall emergency response framework.

This ONR Project Assessment Report describes and explains the basis for the determination, in accordance with REPPiR, of the requirement for an off-site emergency planning area and the area within which prior information is to be distributed to persons around Magnox Ltd. nuclear licensed site at Berkeley.

REPPiR requires operators who carry out work involving quantities of radioactive materials at or beyond those specified by REPPiR, in this case Magnox Ltd., to undertake a Hazard Identification and Risk Evaluation (HIRE) in relation to their work with ionising radiations. This HIRE must identify all hazards on the site with the potential to cause a radiation accident, and evaluate the nature and magnitude of the risks to employees and other persons (e.g. those who live or work nearby) arising from those hazards. REPPiR also requires that operators must assess their HIRE and submit a Report of Assessment (RoA) to ONR either prior to commencement of the work with ionising radiation, following any relevant material change in this work, or within three years of the last assessment, whichever is the shorter.

Previous determinations by ONR for the Berkeley site have concluded that a radiation emergency is reasonably foreseeable and have therefore specified an off-site local authority emergency planning area and prior information area represented by a single circular area around the site with a radius of 1 km.

This new determination has been undertaken in response to the latest RoA submission to ONR by Magnox Ltd. The submission concludes that '*there are no reasonably foreseeable events which could lead to a radiation emergency*'.

ONR has made an assessment of the Magnox Ltd.'s technical submissions in accordance with its regulatory processes, guidance associated with REPPiR itself, and the relevant ONR

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<sup>1</sup> ONR has historically used the term detailed emergency planning zone (DEPZ) to refer to the area it defined under REPPiR regulation 9 as requiring an off-site emergency plan. (The term is still used this way in some ONR guidance.) As the term is not used within REPPiR itself (although referred to in the related guidance), and to ensure legal clarity and avoid misunderstanding amongst stakeholders, this report refers to the 'REPPiR off-site emergency planning area' under regulation 9 rather than to 'detailed emergency planning zone' or 'DEPZ'.

<sup>2</sup> This is sometimes, and has historically been, referred to as the Public Information Zone (PIZ) under regulation 16, but for the same reasons as given above is not used in this report. This report refers to the 'REPPiR prior information area'

technical assessment guide. ONR's assessment agrees with the Magnox Ltd. conclusion that a radiation emergency at the Berkeley nuclear licensed is not reasonably foreseeable.

That being so, some aspects of REPPIR, principally REPPIR regulations 7(1), 9(1) and 16(1), relating to the operator's emergency plan and the identification of off-site planning and prior information areas will no longer apply to the Berkeley site.

The recommendation of this report is that ONR write to:

- Gloucestershire County Council and Magnox Ltd. to notify them that a REPPIR off-site emergency planning area is no longer required for the Berkeley nuclear licenced site.
- Gloucestershire County Council to notify them that there is no longer a requirement under REPPIR for the local authority to prepare an off-site emergency plan in respect of the Berkeley nuclear licensed site.
- Magnox Ltd. to notify them that the requirement to ensure the appropriate provision of prior information to the public is no longer required under REPPIR. This should be copied to Gloucestershire County Council.
- Magnox Ltd. to notify them that there is no longer a requirement under REPPIR for an operator's emergency plan.
- The department for Business, Energy & Industrial Strategy, the Nuclear Decommissioning Authority, the Food Standards Agency, and the Environment Agency to inform them of the removal of the REPPIR off-site planning and prior information areas for the Berkeley nuclear licensed site.

Whilst this determination removes the requirement for detailed emergency planning under REPPIR, in relation to the Berkeley site, proportionate emergency arrangements for the protection of the public remain in the form of;

- local authorities have duties to make adequate emergency arrangements under other legislation such as the Civil Contingencies Act 2004;
- operators have general duties under the Health and Safety at Work etc. Act 1974 to ensure, so far as is reasonably practicable, the safety and welfare of employees and other persons;
- operators have duties under REPPIR regulations 5(1) and 5(2), to review their HIRE every three years or sooner if a revision and resubmission is required because of a material change in the work with ionising radiation;
- operators have duties under REPPIR regulation 4(2), where radiation risks to employees or other persons have been identified during the HIRE, take all reasonably practicable steps to prevent any such accident and limit the consequences of any such accident which does occur. Operators who hold a nuclear site licence are, under site licence condition 11 attached to the nuclear site licence, also required to make and implement adequate arrangements for dealing with any accident or emergency; and under regulation 12 of the Ionising Radiations Regulations 1999, required to determine what contingency plans are necessary to address reasonably foreseeable accidents.

These other duties are not directly affected by this determination, and, where ONR is the enforcing authority, it will continue to seek assurance that the operator remains compliant with these legal obligations, including any such provision and co-ordination of adequate off-site emergency arrangements as these other duties may require.

## LIST OF ABBREVIATIONS

DCIC	Ductile Cast Iron Container(s)
DEPZ	Detailed Emergency Planning Zone (Ref: REPPIR regulation 9(1))
EURATOM	European Atomic Energy Community
FED	Fuel Element Debris
FEPA	Food and Environment Protection Act 1985
FSA	Food Standards Agency
GB	Great Britain
HIRE	Hazard Identification and Risk Evaluation
IAEA	The International Atomic Energy Agency
ILW	Intermediate Level Waste
LLW	Low Level Waste
NDA	Nuclear Decommissioning Authority
ONR	Office for Nuclear Regulation
PIZ	Public Information Zone
REPPIR	Radiation (Emergency Preparedness and Public Information) Regulations 2001
RoA	Report of Assessment
SAP	Safety Assessment Principle(s) (ONR)
TAG	Technical Assessment Guide (ONR)

## TABLE OF CONTENTS

1	REGULATORY CONTEXT .....	1
2	BACKGROUND .....	1
3	SCOPE .....	2
4	METHODOLOGY .....	3
5	ASSESSMENT OF TECHNICAL SUBMISSIONS .....	4
6	CONCLUSIONS .....	7
7	RECOMMENDATIONS .....	7
8	REFERENCES .....	9



## 1 REGULATORY CONTEXT

The Energy Act (reference 1) requires the Office for Nuclear Regulation (ONR) to do whatever it considers appropriate for the purposes of protecting persons against risks of harm arising from ionising radiations from GB (Great Britain) nuclear sites, including:

- a) Securing the health, safety and welfare of persons at work on GB nuclear sites; and
- b) Protecting persons, other than persons at work on GB nuclear sites, against risks to health or safety arising out of or in connection with the activities of persons at work on GB nuclear sites.

ONR does this by providing efficient and effective regulation of the nuclear industry, holding it to account on behalf of the public, and, in particular, ensuring appropriate arrangements are in place to deal with a nuclear emergency.

ONR's responsibilities include a legal duty, where it is concluded that there is a potential for a reasonably foreseeable radiation emergency (as defined in the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPiR) (reference 2)), to determine an off-site emergency planning area. This is the area within which, in ONR's opinion, any member of the public is likely to be affected by such an emergency<sup>3</sup>. In these cases, there is also a legal duty under the same regulations for ONR to determine an area within which prior information is to be distributed to the public<sup>4</sup>. A radiation emergency is defined in REPPiR as an event where a person off-site is likely to receive a radiation dose in excess of the thresholds in REPPiR (typically an effective dose in excess of 5 milliSieverts) in the 12 months following the event. It therefore constitutes an important component of the UK's overall emergency response framework.

This report sets out the outcome and justification for the determination of the requirement for off-site emergency planning and prior information areas for the Magnox Ltd. nuclear licensed site at Berkeley, in accordance with the requirements of REPPiR regulations 9(1) and 16(1) respectively (reference 2).

ONR is of the opinion that the extent of the areas for local authority off-site planning and for the provision of prior information by the operator should be the same. This is a reflection of the fact that the factors considered by ONR for the determination of these areas are the same. As a consequence, and for simplicity, where the term 'REPPiR off-site emergency planning area' is used in this report, it refers equally to the off-site emergency planning and prior information areas.

## 2 BACKGROUND

The UK nuclear regulatory system requires that every licensee (i.e. nuclear site licence holder) demonstrate to the regulator that it fully understands the hazards and risks associated with its operations and controls them appropriately. The regulator assesses the safety and security of the design and operation of nuclear plant to ensure that licensees' provisions are robust and that risks are reduced so far as is reasonably practicable.

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<sup>3</sup> ONR has historically used the term detailed emergency planning zone (DEPZ) to refer to the area it defined under REPPiR regulation 9 as requiring an off-site emergency plan. (The term is still used this way in some ONR guidance.) As the term is not used within REPPiR itself (although referred to in the related guidance), to ensure legal clarity and avoid misunderstanding amongst stakeholders, this report refers to the 'REPPiR off-site emergency planning area' under regulation 9 rather than to 'detailed emergency planning zone' or 'DEPZ'

<sup>4</sup> This is sometimes, and has historically been, referred to as the Public Information Zone (PIZ) under regulation 16, but for the same reason as given above is not used in this report. This report refers to the 'REPPiR prior information area'.

Magnox Ltd., as the licensee, is the company responsible for operations at the Berkeley site on behalf of the Nuclear Decommissioning Agency (NDA), a GB non-departmental public body responsible for managing the effective and efficient clean-up of the GB's nuclear legacy.

The Berkeley nuclear licensed site is located approximately 2km west of the nearest urban development at Berkeley, Gloucestershire. The site had two Magnox power reactors which supplied electricity to the national grid for 27 years under the CEGB (Central Electricity Generating Board). Following shut down of the reactors in 1988 and 1989, both were defueled and major structures on site such as the turbine hall, the cooling ponds and the boilers were dismantled. In 2005 the site began operating as a contractor to the newly created Nuclear Decommissioning Authority (NDA). In 2011 the site was re-licensed to the current licence holder Magnox Ltd.

In relation to emergency planning, REPPiR requires the operator, in this case Magnox Limited, to undertake a Hazard Identification and Risk Evaluation (HIRE) of all hazards, arising from their work, with the potential to cause a radiation accident on their site. These assessments must be sufficient to demonstrate that all such hazards have been identified and the nature and magnitude of the risks to employees and other persons arising from those hazards have been evaluated. REPPiR also requires that operators submit a Report of the Assessment (RoA) of their HIRE to ONR prior to the commencement of the work with ionising radiation, following any relevant material change in the work, or within three years of the last assessment, whichever is shorter.

Where it is reasonably foreseeable that a radiation emergency (as defined in REPPiR) could arise, REPPiR requires ONR to determine areas within which, in its opinion, persons (including any member of the public) are likely to be affected by such emergencies. This then defines the area for which local authorities are required to prepare an adequate off-site emergency plan (regulation 9(1)) and for which operators are required to provide specified prior information (regulation 16(1)) to members of the public without them having to request it and also make that information publicly available.

The off-site emergency plan, in cases where one is required, should include countermeasures in order to reduce radiation doses to members of the public, such as sheltering, evacuation, administering stable iodine tablets (in the case of operating nuclear reactors) and other protection measures that are relevant, reasonably practicable, and proportionate to the radiological risk.

This report sets out the main considerations that ONR has given to reviewing the requirement for REPPiR off-site emergency planning areas for the Berkeley site. It takes due account of the findings of the RoA, HIRE and ONR's principles and guidance for making such determinations.

### **3 SCOPE**

This report sets out the basis for, and conclusions of the determination of the requirement for REPPiR off-site emergency planning areas relating to the Berkeley site. It has been undertaken in accordance with the guidance on REPPiR (reference 3) and the supporting relevant ONR Technical Assessment Guide (TAG) (reference 4) which incorporates ONR's principles for determination of REPPiR areas, and related guidance.

ONR's principles recognise the learning that has emerged from global events such as occurred at Fukushima and the subsequent need to review the scope of off-site emergency planning. They also reflect ONR's commitment to high standards of nuclear safety at nuclear installations, and its continual efforts to seek improvements to standards and to the consistency and transparency of its decision-making.

Provisions for the implementation of food restrictions are not relevant to the process of determining the REPPiR off-site emergency planning area on the basis that they are provided

separately (Food and Environment Protection Act 1985 (FEPA)) and are under the legal jurisdiction of the Food Standards Agency (FSA). These provisions are therefore addressed by separate legislation other than REPPiR, may be exercised in a broader range of circumstances (i.e. not restricted to a radiological event) and are subject to existing planned implementation arrangements made by the FSA. They are therefore outside the scope of this report.

## **4 METHODOLOGY**

### **4.1 ONR'S PROCESS FOR DETERMINING A REPPiR OFF-SITE EMERGENCY PLANNING AREA**

This 'two step' process requires that ONR:

- A. Conduct an initial independent technical assessment of the information provided by the licensee in their HIRE and RoA seeking and using additional information as appropriate; and
- B. Where the potential for a REPPiR defined reasonably foreseeable radiation emergency exists, establish and consider any other relevant practical and strategic factors relating to the planning and practical implementation of measures to restrict public exposure so far as reasonably practicable (e.g. urgent countermeasures) for those persons who are likely to be affected by a radiation emergency.

Step A requires ONR to assess the operator's identification and characterisation of the likelihood, nature and magnitude of the radiation related risks that may result for a radiation accident. ONR also assess the operator's assessment of whether there is the potential for a radiation emergency to occur that is reasonably foreseeable. If this potential exists ONR will then consider the likely extent of any area within which the dose criteria contained within Schedule 1 of REPPiR may be met or exceeded. This indicates the minimum distance for further consideration in Step B, and is usually presented in the operator's RoA as a circle with a specified radius centred at the source of the potential accident.

Step B applies additional pragmatic, population (including vulnerable groups), geographic and practical factors to the ONR determination and requires dialogue with the relevant local authority. The nature of these factors is set out in detail in the relevant ONR TAG (reference 4). Whilst the determined REPPiR off-site emergency planning area, as a result of considering these additional factors, need not be circular, it cannot be smaller than that arising from the technical assessment under Step A.

### **4.2 BASIS OF ASSESSMENT**

The REPPiR off-site emergency planning area must, as a minimum, include all of the area around the site within which a person (including members of the public) could receive an effective dose in excess of 5 mSv in the year following a reasonably foreseeable radiation emergency (or other dose criteria defined in REPPiR Schedule 1). When assessing the extent of exposure, REPPiR requires that operators assess the potential doses to members of the public from all exposure routes and, for this purpose, must disregard any health protection countermeasures that may have been taken by the local authority, emergency services or the exposed persons themselves, during the first 24 hours immediately following the event.

The Berkeley RoA (reference 5) provides details of the radioactive inventories on the site which exceed the levels specified in schedules 2 and 3 of REPPiR. The majority of the radioactivity present on the site is in the form of solid radioactive waste and that is further categorised as Intermediate Level Waste (ILW) or Low Level Waste (LLW). The most significant inventories are summarised below:

- Some 1,700 m<sup>3</sup> of ILW stored in the Active Waste Vaults and other secure structures on site including Fuel Element Debris (FED) – 1,040 m<sup>3</sup>, sludges ~ 150 m<sup>3</sup> and ion exchange resins ~30 m<sup>3</sup>
- Some 3,120 m<sup>3</sup> of graphite moderator and reflector (ILW)
- Some 375 m<sup>3</sup> of steel/miscellaneous metal (reactor)(ILW)
- Some 26,100 m<sup>3</sup> of concrete (Reactor and non-Reactor (ILW & LLW))
- Some 3,600 m<sup>3</sup> steel (Reactor and non-Reactor)(LLW)
- Some 1,730 m<sup>3</sup> miscellaneous metals and other materials (Reactor and non-Reactor)(LLW)

## **4.3 STANDARDS AND CRITERIA**

### **4.3.1 ACTS, REGULATIONS AND GUIDANCE**

The relevant standards and criteria considered in this assessment are those contained in within REPIIR (reference 2) and its associated guidance (reference 3). REPIIR are regulations created under the Health and Safety at Work Act etc. 1974 and implements the articles on intervention in cases of radiation emergencies contained in the European Council Directive 96/29/EURATOM (European Atomic Energy Committee (EURATOM)) – Basic Safety Standards for the Protection of the Health of Workers and Members of the Public against the Dangers from Ionising Radiation (reference 6).

### **4.3.2 SAFETY ASSESSMENT PRINCIPLES AND LICENCE CONDITIONS**

ONR's Safety Assessment Principles (SAPs) provide inspectors with a guiding framework for making consistent regulatory judgements on nuclear safety cases. Although the SAPs are not directly relevant to the assessment of REPIIR submissions, the guidance within SAP: AM.1 - Accident management and emergency preparedness (reference 7) has been taken into account.

### **4.3.3 TECHNICAL ASSESSMENT GUIDES**

The SAP principles are supported by a suite of internal Technical Assessment Guides (TAG), with the following TAG being applied to this assessment:

- The technical assessment of REPIIR submissions and the determination of detailed emergency planning zones, ONR-NS-TAST-GD-082 (reference 4). This incorporates ONR's revised principles for the determination of REPIIR off-site emergency planning areas.

### **4.3.4 NATIONAL AND INTERNATIONAL STANDARDS AND GUIDANCE**

The following national guidance has also been considered, and where appropriate, has informed the conduct of this assessment:

- A guide to the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (reference 3).

ONR also notes the relevance of the following international standards and guidance:

- The International Atomic Energy Agency (IAEA) Safety Standard Series-Preparedness and Response for a Nuclear or Radiological Emergency GSR Part 7 (reference 8).
- IAEA Safety Standards-Arrangements for Preparedness for a Nuclear or Radiological Emergency GS-G-2.1 (reference 9).

## **5 ASSESSMENT OF TECHNICAL SUBMISSIONS**

The licensee (Magnox Ltd) has undertaken a three yearly review of their REPIR submission for the Berkeley Site in accordance with regulation 5(2) of REPIR. This review resulted in the submission of a revised REPIR Report of Assessment (reference 5) which details the Hazard Identification and Risk Evaluation. The RoA contains information about the Berkeley site, current and planned operations and their associated radiological hazards, including when the site goes into Care and Maintenance.

ONR has subjected the RoA (reference 5) and supporting documentation to expert and detailed technical assessment. A summary of the submissions and ONR's technical assessment (reference 10) of them are detailed in sections 5.1 and 5.2 respectively.

## 5.1 MAGNOX LIMITED ROA

To identify candidate radiation accidents which could lead to a radiation emergency as defined by REPIR, Magnox Ltd. reviewed the hazard assessments from all of the Berkeley facility safety cases. To determine if it was reasonably foreseeable for a radiation emergency to occur Magnox Ltd. applied screening criteria based upon calculated initiating frequency and accident consequences. The assessment excluded radiation accidents that occurred from internal fault sequences with frequencies of less than 1 in 1,000,000 per year ( $10^{-6}\text{yr}^{-1}$ ) and defined these as not reasonably foreseeable. Magnox's reason for use of this threshold is that it allows the identification of "cliff-edge" effects whereby accidents with very low initiating event frequencies that could lead to significant radiological consequences to be included in the assessment. Magnox included all accidents with an off-site screening radiation dose of greater than 0.5mSv within their assessment.

The Magnox RoA includes all the accidents that are deemed to be reasonably foreseeable arising from fault sequences in site's current operations. Current operations include the retrieval, transfer and conditioning of ILW from the Active Waste Vaults and the Shielded Area into Ductile Cast Iron Containers (DCICs) for passive storage in the Interim Storage Facility until disposal of the waste is undertaken. The RoA also includes accidents identified as being reasonably foreseeable under the phase of Care and Maintenance when all ILW will be contained within the two reactor Safestores and the Interim Storage Facility.

The internal faults that were assessed within the RoA include both localised and propagating (i.e. spreading) fires within each of the Active Waste Vaults, and within a DCIC, all of which would contain Fuel Element Debris (FED). Following submission of the RoA, larger quantities of fuel element material have been identified within one of the Active Waste Vaults than were stated within the RoA and so Magnox submitted a revised radiological consequence assessment of the relevant vault fire (reference 11).

No reasonably foreseeable external faults were identified which gave rise to a public dose of 0.5mSv or greater within the PAR. Aircraft crashes were discounted as the likelihood was well below 1 in a million years and furthermore, the radiological consequence of an aircraft crash into each facility was assessed to result, in each case, in a public dose below 5mSv. Site wide flooding and seismic events were both excluded from further assessment as the consequential public dose were calculated to be significantly less than 0.5mSv in each case. Security incidents were assessed to give rise to radiological consequences of no greater consequence than from internal faults.

The RoA reports public radiation doses from off-site releases in relation to the fault sequences identified. In line with REPIR requirements, cumulative exposure from the following pathways was calculated; inhalation of contaminated air; ingestion of contaminated food in the first 24 hours following the event; exposure to external radiation emitted by the contaminated air; and, exposure to external radiation emitted by radioactive material that has settled on the ground. Doses assumed that the public were considered to be downwind of the accident and at the site fence for the first 24 hours, and then at the point of nearest dwelling thereafter over the

following year, and so disregarded health protection measures such as evacuation or sheltering.

The Magnox Ltd. RoA identifies the worst reasonably foreseeable accident as a fire in one of the Active Waste Vaults which spreads to engulf all of the FED material held in this area. The public radiation dose, calculated in line with REPPiR requirements from this fault was determined to be 1.04 mSv in the year following the radiation accident. As this dose is significantly below the REPPiR 5 mSv threshold for a radiation emergency, the assessment concludes that *'there are no reasonably foreseeable events which could lead to a radiation emergency'*.

## 5.2 ONR TECHNICAL ASSESSMENT OF THE MAGNOX LIMITED HIRE/ROA

REPPiR and ONR guidance (references 3, 4) suggests that best-estimate analysis should be used by operators to calculate off-site dose consequences and that "evidence should be presented that unwarranted conservatism is not being used". Unwarranted conservatism can give rise to a disproportionately large off-site emergency planning area acknowledging that it may be appropriate to apply some conservatism, for example to simplify the analysis of off-site dose estimation. Therefore, careful consideration has been given as to whether the analysis undertaken by Magnox is appropriate to support the conclusions of the RoA.

ONR undertook a detailed technical assessment (reference 10) of the Berkeley RoA during the course of which ONR looked at evidence to further investigate claims. ONR's assessment focussed on the following areas to form a view on the adequacy of the Magnox Ltd. submission:

- Whether the radionuclide inventory on the site exceeds the REPPiR Schedule 2 or 3 values for REPPiR to apply;
- The definition and selection of an appropriate reasonably foreseeable reference accident;
- The adequacy of the RoA in determining the magnitude of off-site radiological releases resulting from a reasonably foreseeable accident; and
- Whether a radiation emergency is reasonably foreseeable.

ONR has examined the fault frequency and source term assumptions used by Magnox Ltd in its assessment. ONR accepts that the approach adopted by Magnox Ltd. to identify candidate reasonably foreseeable faults which could lead to a radiation emergency satisfies the expectations of REPPiR guidance.

ONR examined the validity of the public dose assessment methods used by Magnox Ltd. The calculation method provides conservative assessments of radiation doses and together with a lower threshold of 0.5 mSv (instead of the 5mSv definition of a radiation emergency in REPPiR result), the methodology was accepted as conservative but appropriate.

ONR's technical assessment concludes that Magnox Ltd.'s submission adequately meets the requirements of REPPiR.

ONR supports Magnox Ltd.'s conclusion that the fault which could generate the greatest off-site public dose consequence, and should hence be used as the reference accident, is a fire in one of the Active Waste Vaults. It is assumed that the fire spreads to engulf all of the FED material held within the vault, resulting in a radiological release. This would give an estimated effective dose of less than REPPiR Schedule 1 dose criteria and less than 5 mSv to a member of the public at the site fence.

ONR is therefore satisfied that a radiation emergency as defined in REPPiR is no longer reasonably foreseeable at the Berkeley site.

Consequently, REPPIR regulations 7(1), 9(1) and 16(1) no longer apply and there is no legal requirement under REPPIR relating to the Berkeley site for:

- ONR to determine a local authority off-site emergency planning area;
- The local authority to prepare an off-site emergency plan;
- The operator to provide prior information under REPPIR; and
- The operator to prepare a REPPIR operator's emergency plan.

The application of Step B of ONR's determination process (relating to the consideration of other practical and strategic factors to identify an off-site planning area) is therefore not required.

Although a radiation emergency is no longer reasonably foreseeable (and consequently a local authority off-site emergency planning area and a prior information area are no longer required by REPPIR), the radioactive inventory of the Berkeley site continues to exceed the specified quantities set out in REPPIR Schedule 2. Consequently, under REPPIR regulations 5(1) and 5(2), the licensee continues to be required to review their HIRE every three years or sooner if a revision and resubmission is required because of a material change in the work with ionising radiation. Whilst not anticipated, should such a re-submission suggest any material increase in the risk profile of the site, ONR will make a further re-determination to consider whether further measures under REPPIR to protect the public in the event of a reasonably foreseeable radiation emergency would be justified.

Although there is no longer a direct requirement under REPPIR for an operator's plan, or for the provision of prior information by the operator in respect of the Magnox Ltd. Berkeley site, the operator will continue to have relevant legal duties under other legislation that are not directly affected by this determination.

Similarly, nuclear licensees have general duties to ensure, so far as is reasonably practicable, for the safety and welfare of employees and other persons; to make and implement adequate arrangements for dealing with any accident or emergency (under standard licence condition 11 attached to the nuclear site licence); to take all reasonably practical steps to prevent a such radiation accident and limit the consequences of any such radiation accident (under REPPIR regulation 4(2)); and to prepare contingency plans under the Ionising Radiation Regulations 1999 as appropriate.

ONR, where relevant, will continue to deliver regulatory oversight of the other legal duties as they apply to Magnox Ltd.

## **6 CONCLUSIONS**

This report describes ONR's assessment of Magnox Ltd.'s RoA and declaration of no change for the Berkeley nuclear licensed site and its determination of the requirement for REPPIR off-site emergency planning and prior information areas.

This report concludes that:

- ONR is satisfied that the technical submission made by Magnox Ltd demonstrates that members of the public are not likely to be exposed to effective doses at or in excess of 5 mSv in the year following a reasonably foreseeable radiation accident (or other relevant dose criteria in Schedule 1 of REPPIR).
- There is no longer a requirement under REPPIR regulations 7(1), 9(1) and 16(1) for an operator's emergency plan, the identification of off-site planning and prior information areas by ONR, the preparation of a local authority off-site emergency plan, or for the provision of prior information by the operator in respect of the Berkeley nuclear licensed site.

## **7 RECOMMENDATIONS**

As a result of the conclusions of this report, it is recommended that ONR write to:

- Recommendation 1 Gloucestershire County Council and Magnox Ltd. to notify them that a REPPIR off-site emergency planning area is no longer required for the Berkeley nuclear licenced site.
- Recommendation 2 Gloucestershire County Council to notify them that there is no longer a requirement under REPPIR for the local authority to prepare an off-site emergency plan in respect of the Berkeley licensed site.
- Recommendation 3 Magnox Ltd. to notify them that the requirement to ensure the appropriate provision of prior information to the public is no longer required under REPPIR. This should be copied to Gloucestershire County Council.
- Recommendation 4 Magnox Ltd. to notify them that there is no longer a requirement under REPPIR for an operator's emergency plan.
- Recommendation 5 The department for Business, Energy & Industrial Strategy, the Nuclear Decommissioning Authority, the Food Standards Agency, and the Environment Agency to inform them of the removal of the REPPIR off-site planning and prior information areas for the Berkeley licensed site.

ONR will continue to seek assurance that the operator continues to make adequate provisions and maintains emergency arrangements for the Berkeley nuclear licenced site. These include the residual emergency and contingency related legal requirements of the Health and Safety at Work Act etc., the Nuclear Installations Act and the Ionising Radiations Regulations 1999.

## 8 REFERENCES

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5. Berkeley Site: REPIIR Regulation 6(4) Hazard Identification and Risk Evaluation: Report of Assessment, Ref: BNLS/REP/ET/0199/08, Issue 4 Rev 1 February 2016. Trim Ref: 2016/69315.
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