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Dear Dr Weightman

This submission comments on the ONR's Interim Report, *Japanese earthquake and tsunami: Implications for the UK Nuclear Industry Interim Report HM Chief Inspector of Nuclear Installations 18 May 2011*ⁱ and where relevant raises the outstanding questions from the initial submission Greenpeace made to the ONR on 14th April 2011.

We believe it necessary to comment on the ONR's report because we believe it is overly reassuring on both the UK regulatory system and presents an almost complacent view on key issues concerning the UK nuclear industry e.g. arrangements for spent fuel management.

If the ONR continues with its views unchallenged - as in its interim report - then it is highly unlikely a fair final report will emerge.

ONR - regulatory approach

We do not accept the conclusions 3, 4 and 5 in the report about the UK regulatory approach and licensing regime..

UK approach

The UK nuclear regulators do not take a prescriptive approach to how the industry should build, operate and maintain nuclear installations. It relies on a goal-setting and principles based approach through which, if the industry can demonstrate a certain standard or outcome can be achieved, the regulator accepts the proposed course of action or technology etc.

Whilst the ONR believes that a principles based approach is acceptable, it is clear (e.g. the THORP accident at Sellafield in 2005)ⁱⁱ that leaving operators to their own devices may not necessarily avoid accidents or major incidents. Although the NII bought a successful prosecution of BNFL following the release of highly radioactive waste inside one of the Sellafield plants - it remains the fact that the incident happened also raises questions about the effectiveness of the 'principles' approach.

The ONR's approach - different from some other countries (e.g. the US) in which the regulators make much clearer demands on the industry - should be examined independently to see if they are indeed fit for purpose.

Too much onus is placed on nuclear operators in how to apply regulations. The ONR's recommendations, many of which rely on operator application or assessment, are a further

example of this. It is doubtful whether, if the public understood this, that confidence in the ONR would be as high the regulator seems to think it is (conclusion 3). It may not be about enhancing confidence for the ONR but about building it.

It has been widely reported that the Japanese authorities were warned of the potential risks of a massive tsunami hitting a nuclear plant or not looking to the 'unexpected'.ⁱⁱⁱ The ONR is aware that Japanese nuclear facilities have experienced accidents for which both operators and regulators have been criticised. This, and other evidence emerging, should lead to in-depth questioning of what actions could have been taken to avoid the events at Fukushima if a tsunami or some other major natural event occurred

Further, it is clear from events in Japan that the operators did not do everything that could have been done in the immediate and short-term aftermath of the Fukushima crisis to reduce or prevent the situation worsening. This is not to diminish in any way the bravery of staff and management who continue to risk much to bring the situation under control. We acknowledge the extraordinary series of catastrophes in Japan which led to the nuclear crisis. However, the fact remains that some startling decisions were made to attempt to deal with the situation following the earthquake and tsunami. Of course people will say we are all wise with hindsight, but is it clear that the 'human element' (recommendation 11) was more of a factor than people thought it might be. That the ONR says the Japanese response was 'exemplary' is, we believe, going too far. The ONR's view raises questions as to just what extent it will go in examining what happened in Japan, and applying the lessons learnt in the UK.

A linked area of concern with this is the lack - or perceived lack - of independence of the regulators in Japan and its overly close connections with the industry.^{iv} The ONR report brushes over these concerns. Whether it likes it or not, the UK regulator risks the lack of public confidence in the future for a number of reasons.

ONR self-commentary

In its efforts to assure the UK public that there are no concerns for the UK from the ongoing nuclear crisis in Japan (in terms of UK nuclear safety) the ONR's media work - based on the conclusions of the report - gives the impression that the ONR has few, if any concerns for the UK's nuclear programme in the light of what happened in Japan.

The ONR does itself no favours in giving the impression that there is little or no need for concern. Its report basically amounts to a self-examination and it looks defensive rather than analytical - in particular over its work on the Generic Design Assessment process for new reactors.

On this we note (para between conclusion 4 and 5 - see also para 363) that the ONR states:

'This reinforces the way in which we have been able to develop an effective approach to regulating nuclear new build through a system of Generic Design Assessment (GDA) and specific nuclear site licensing, and construction consents. (our emphasis)

The above gives the impression that the GDA process is regulated, whereas the ONR knows it is a voluntary process (which is why the reactors vendors have, perhaps, not always responded in full to information requests). The ONR is fully aware of the problems with the GDA process (as its quarterly reports on this issue testify). Those reports reveal significant short-comings in the GDA approach and show that many issues remain unresolved because the vendors have not given full information in a timely manner.^v

That the ONR was (pre-Fukushima) preparing to issue interim design acceptance confirmation of reactor designs (and associated plant) rather than full sign-off is indicative of the problems around the GDA process. That an incomplete GDA process will be followed by what is effectively a close-door licensing system will not instill public confidence - people will expect to see how remaining issues are resolved and will want input where necessary. Parliament may also want to scrutinise

licensing processes.

It is clear from reading the report that there however are a number of key issues which the UK nuclear industry has to now consider in light of what happened in Japan (as per the recommendations). Yet already an overly optimistic view of the situation in the UK has been widely presented. Not everyone is convinced. As some media reports following the release of the interim report noted, the ONR looks as if it is not being truly critical of itself or the industry.^{vi}

The overly confident view of the industry, as expressed by the head of the World Association of Nuclear Operators^{vii} is evident in the ONR's report. The ONR's approach seems to be less critical than of European counterparts such as France^{viii} (we attach the complete article on this).

We also ask the ONR to explain how its tests/examination fits with those listed by the Convention on Nuclear Safety^{ix}, for example how it intends to ensure: *protection of the public near a plant that has had a severe accident, and communication in accident situations*. The ONR review is not cross-departmental and does not involve - to date - all the relevant authorities (Greenpeace will return to this matter in a further submission).

ONR policy influence

The ONR, whilst claiming it steers clear of involvement in policy, certainly appears to have taken a political line - indeed a pro-nuclear stance - insomuch that its report was so warmly welcomed by the pro-nuclear lobby and industry. Witness the numerous statements from the pro-nuclear/industry sector in welcoming the report.^x The unquestioning approach on key issues around new build (e.g. conclusions 7 and 8) is not healthy. Whilst the ONR could hardly be expected to openly condemn its past or present work it does have to accept that its current position looks partisan not only in defence of itself, but the industry as a whole. This then is used by decisions makers who will point to the ONR's report raises few concerns for the future nuclear programme (see the Secretary of State's response to the report).^{xi}

In April Greenpeace asked the ONR to: *Give the reasons for the tight deadline imposed for this review given that Fukushima was (and is) very much a dynamic situation with the crisis at the plants not yet fully under control. For many people and organisations - including nuclear specialists, advisory bodies and NGOs - a deadline of 15th April (in order to have input into the interim review), or 15th June (for the final review) will be considered as premature and unrealistic in terms of being able to submit substantive evidence. We recognise the ONR has said the review will be open for people to 'submit any significant new additional information after that date' (15th June) but how such information will be scrutinised (and by whom) is not clear. The ONR will be aware that there are suspicions that the timetable has been imposed in order to maintain the existing new-build timeline rather than properly to learn lessons from Fukushima and to assure safety. It is impossible to have a proper review by the deadline set by the ONR.*

Greenpeace stands by the above: the ONR's report has done nothing to encourage Greenpeace (and many others) have believe that the timeline is not being driven by the need to maintain the timeline for the UK new build programme rather than safety concerns.

Independence from the private nuclear sector

Given the demographics of the ONR's workforce is it expected that quite a number will retire in the relatively near future. Most will probably be replaced with people from the private nuclear sector. What is not clear is how many and on which projects or company plans they will comment, in particular regarding new build. Greenpeace raised this as an issue in its response to the consultation on the Nuclear Safety Directorate's restructuring (to create the ONR) in September 2009.^{xii} On Ex-industry employees we commented:

The proposal does not make clear how employees brought in from the private sector would be segregated from working on issues they have undertaken for private sector organisations e.g. can

anyone who previously worked on a reactor design be given work 'signing off' on any designs submitted? This goes to the heart of the impartiality of the Directorate and should be explained in full.

In addition to having ex-industry people with very recent experience with companies that might come under regulator scrutiny, we also note the summary recommendations of the Stone review includes having the Directorate have a "exchange programme" with industry, presumably of staff as well as for information purposes. This puts the ND/NSC too close to the industry at a time when greater distance and critical examination will be most expected by the public and Parliament. This underlines the need for proper Parliamentary examination of the proposal, not having it rushed through under an affirmative LRO (legislative reform order).

These concerns remain relevant. We also raised questions about the increasing number of nuclear safety related areas to be covered under the ONR (e.g. security, safeguards and transport). We noted then:

Pathways which allow for policy and/or regulatory critique and scrutiny are being shut through the different concentrations of powers and functions - not a healthy situation.

Many industry people and inspectors are required to sign the official secrets act (or other prohibitive pieces of legislation/agreements) which do not foster an atmosphere of openness and transparency. What will the ONR do to address this as part of opening up the industry to critique and challenge?

Conclusion 3 that: *The Government's intention to take forward proposals to create the Office for Nuclear Regulation, with the post and responsibilities of the Chief Inspector in statute, should enhance confidence in the UK's nuclear regulatory regime to more effectively face the challenges of the future*' is invalid because this report, which appears self-serving, does not enhance confidence but undermines it. That is due solely to the ONR's handling of this matter.

Openness and transparency

Recommendation 26 of the ONR's report states: *A response to the various recommendations in the interim report should be made available within one month of it being published. These should include appropriate plans for addressing the recommendations. Any responses provided will be compiled on the ONR website.*^{xiii}

The ONR has already failed its own test as original the submissions for the interim report are still not available. It has also failed one of the aims of the report (para 6, page 1) to be: *Be open and transparent and be published with public access to all contributions as far as security and other considerations (such as the willingness of those submitting evidence or information to allow open disclosure).*

In April Greenpeace asked the ONR if it: *will publish submissions as soon as they are presented to the ONR, so that contributors can consider and add to submissions already made?*

In the ONR's call for evidence^{xiv} 4th April the ONR said: *"My report will be produced in an open and transparent way. I therefore intend to publish all submissions on ONR's website as they are received, so please do not send anything that is copyright.*

Greenpeace subsequently wrote^{xv} to the ONR asking for copies of submissions put to the interim review because it had been reported that EDF has submitted information to the ONR but that: *EDF declined to release a copy of its submittal and ONR has yet to publish it.*^{xv}

On 3rd May the Chief Inspector replied, saying

You are quite right about our intention for greater transparency and openness, and in this regard to publish the submissions that we receive on lessons to be learnt from the Fukushima accident. We

did say that we publish them as we receive them but we underestimated how many we would receive, the nature of some of them and then logistics of getting them checked legally and onto our website as a total package. Additionally, we want to ensure that as far as possible none are withheld and this can take some time to achieve. However, we are determined to put them into the public domain alongside the interim report, which is due to be available by the end of May. Of course there will be opportunities to put in further submissions after that date in response to submissions published, our interim report, and other matters that might be relevant to our final report.

I hope you recognise my commitment to openness and transparency but also that the organisation is having to adjust as we increase the pace to achieve our aims in this area.

It is still not clear - either from the report or ONR website - when the original submissions will be made available.

It may be the ONR does not have the capacity to publish the submissions, which brings up the matter of whether it has been given additional resources to undertake the Fukushima work, along with the GDA work *and* its routine responsibilities. We understand the ONR asked for, but was refused, additional resources. We ask for clarification on this matter (as per our question in April where we asked the ONR to: *State if it is being given additional resources to undertake this review*)

If a lack of resources is leading to essential information being withheld from public or Parliamentary scrutiny then this should be resolved - not brushed aside or ignored.

Security

In April Greenpeace asked: *if it (ONR) will be considering the impact of terrorist attacks as well as accident/plant failure scenarios on relevant nuclear facilities. Further, confirm if it will be looking at reprocessing operations and highly-radioactive liquid waste storage at Sellafield.* Greenpeace also asked for the ONR to: *Confirm the review will look not only at reactors and key auxiliary plant (e.g. backup generators) but also major (and essential) nuclear plant linked to reactor operations such as spent fuel stores.*

We understand that at the urging of the UK and France in particular, the EU stress tests will not discuss the issue of terrorism^{xvi}. Whilst it is understood there are a number of matters which are sensitive vis a vis security, particularly at a time of heightened security, the ONR should still make efforts to find a way in which broad issues concerning a terrorist attack - leading to possible major impacts on a nuclear installation - could be discussed. For example, in an 'ordinary' accident situation many staff may still remain in a position to help mitigate on-site and off-site consequences. In the event of a terrorist attack key personnel may be injured, securing the whole site may come before either technical or medical responses can take place. That the examination of such matters and how they might impact on a 'nuclear crisis' is, to say the least, vital for public confidence. As it is the regulators have taken a highly patronising attitude on this vital issue.

A terrorist attack is one means by which - natural hazards notwithstanding - loss of coolant to a reactor and/or failure of back up electrical supply may occur. It may be that a terrorist strike is not direct on a reactor, but impacts on the systems needed to ensure safe operations. To effectively reduce the public examination of the risks of loss of coolant to natural hazards significantly reduces essential examination of all routes by which LOC or damage to back up electrical supply might happen. Thus, plans and procedures by necessary all essential on-site personnel and/or emergency planning agencies is limited.

Unfortunately, due to the submissions to the review not being public, we have no way of knowing just what has been said about the loss of coolant issue (and associated matters which added to problems at Fukushima) and how natural hazards or malicious acts may impact on other facilities in the future. We submit - as part commentary on this - a report by Large Associates (2006) based on French nuclear industry commentary on an aircraft crash on an EPR.^{xvii} We note also the report

by the Parliamentary Office of Science and Technology (2004), *Assessing the risk of terrorist attacks on nuclear facilities* which Greenpeace contributed to.^{xviii} Greenpeace reserves the right to submit further information on the loss of coolant issue once it has seen the earlier submissions to the review.

Spent fuel

The ONR's report on spent fuel management implies that if spent fuel is moved away from reactor sites then this ceases to be a problem. There is an implication in the ONR report (para 272-280 and 384-390) that past and present management of spent fuel has not, and will not, pose problems and that future spent fuel management will not present any problems either.

We will not submit here all the information we have on spent fuel, suffice it to say:

a) The reprocessing of spent fuel has caused widespread radioactive contamination: this is not an environmentally sound option. It has caused health impacts and security and safety concerns. The report however implies that the process is without problems by making the vaguest of references to it.

b) The creation and build up of liquid high level waste at Sellafield resulting from reprocessing has created a significant nuclear hazard within the the UK and poses risks beyond our national borders. Witness the 2010 report *Consequences in Norway after a hypothetical accident at Sellafield Predicted Impacts on the Environment* by the Norwegian Radiation Protection Authority,^{xix} which explains some of the risks of this waste.

c) There is an implication that there no problems with the continued storage of spent fuel at Sizewell.

d) New build spent fuel is not destined for reprocessing (with all its attendant problems). It is, however, much hotter and more radioactive than the spent fuel currently produced, posing additional risks. Plans (let alone actual implementation) for the storage, encapsulation and disposal of new build spent fuel - the how, why, where and when - remain unresolved. The potential safety impacts of the various options for this should be fully examined. In seeming to give a nod to the industry plans (para 280) we note the ONR does not even mention the 100+ years expected storage prior to disposal. Again, the ONR looks to be skating over a very important mater. Spent fuel storage may, at some sites, become a greater risk (during or after reactor operations) from both natural hazards or malicious acts.

e) Conclusion 10, that: *There is no evidence to suggest that the presence of MOX fuel in Reactor Unit 3 significantly contributed to the health impact of the accident on or off the site*' risks looking premature. Whilst it might at present it is thought the use of MOX did not cause health problems off site, it has to be questioned whether there were no on-site implications of this fuel (e.g. how operators approached dealing with it and what possible knock-on effects that had). Most importantly, it is the possibility of future MOX use and what that might mean for the UK nuclear programme which the ONR has to consider for its final report not just what happened in Japan.

It is to be expected the ONR will treat spent fuel - 'conventional' and MOX in depth when it reports in September.

Greenpeace will submit further questions on this matter in due course. In the meantime Greenpeace refers the ONR to its 2010 submission to consultation on the Nuclear National Policy Statements and the different approaches proposed for spent fuel (page 6-7)^{xx}.

In connection with this, we ask if the ONR will be considering the possible impact of proposals (from some in the nuclear industry) to site a potentially massive central spent fuel store, along with an encapsulation facility, at the above-ground works for a Geological Disposal Facility. Keeping a huge amount of spent fuel in one place - prior to disposal - may pose risks which have not

previously been considered. Similarly, we expect the risks of longer-term storage of spent fuel at reactor sites (if this eventually become *the* option for new build spent fuel) relative to the potential risks from reactor accidents (and back up electrical systems etc) to be fully considered in the ONR's final report.

We expect that - as in our question in April - that reprocessing operations and highly-radioactive liquid waste storage at Sellafield will be fully examined for the final report (as per para 340) where it states: *Although the main focus of this interim report is to identify potential lessons for nuclear power plants in the UK (other parts of the nuclear industry will be covered in the final report), there are aspects of a wider national and international application that have become apparent).*

Submission of other reports

The ONR may already have had sight of or received the attached reports, but for the record - so they are entered into material for consideration - Greenpeace UK submits the following:

- Review of Preliminary Summary of the IAEA Expert Mission to Japan, by Large Associates for Greenpeace France, 1 June 2011
- Incidents, Developing Situation and and Possible Eventual Outcome at the Fukushima Dai-ichi Nuclear Power Plants. Interim report, for Greenpeace Germany Report Ref No R3196-A1 Final) 8 April 2011 John Large.

On the *Human and Organisational Factors UK Nuclear Emergency Arrangements* and matters around radiation and health (as raised in the Annex C) Greenpeace will be submitting further points and questions.

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i <http://www.hse.gov.uk/nuclear/fukushima/interim-report.pdf>
ii <http://www.greenpeace.org.uk/media/reports/british-nuclear-group-court-case-transcript-and-sentence>
iii <http://www.guardian.co.uk/commentisfree/2011/mar/17/fukushima-japan-nuclear-disaster?INTCMP=SRCH>. See also Bulletin of the Atomic Scientists

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- <http://www.thebulletin.org/web-edition/features/fukushima-risk-and-probability-expect-the-unexpected>
- iv <http://www.nytimes.com/2011/03/22/world/asia/22nuclear.html>
- v http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article6613960.ece
UK regulator: Design review program may close before reports finished *Nucleonics Week* Volume 52 / Number 8 / February 24, 2011
- vi <http://blogs.telegraph.co.uk/finance/rowenamason/100010291/why-are-we-trusting-the-nuclear-giants-to-suggest-safety-improvements/>
<http://www.telegraph.co.uk/finance/newsbysector/energy/8522059/UKs-nuclear-reactors-wont-need-major-changes-following-Japan-earthquake.html>
- vii Nuclear safety chief calls for reform, Laurent Stricker says Japan's nuclear disaster should mark a turning point for the nuclear industry, Declan Butler, *Nature News*, April 18 2011 <http://www.nature.com/news/2011/180411/full/472274a.html>
- viii France told to prepare for 'unimaginable' accidents *Inside NRC* Volume 33 / Number 10 / May 9, 2011
- ix CNS parties, IAEA face post-Fukushima nuclear safety world *Nucleonics Week* Volume 52 / Number 14 / April 7, 2011
- x <http://www.edfenergy.com/media-centre/press-news/EDF-Energy-response-to-the-interim-Weightman-repor.shtml>
- xi http://www.decc.gov.uk/en/content/cms/news/pn11_42/pn11_42.aspx
- xii September 2009 Greenpeace response *Consultation the Restructuring of the Health and Safety Executive's Nuclear Directorate*
- xiii Greenpeace also asked the ONR to
- Give defined provisions for public information and consultation.
 - Take evidence in public for its second, final report.
 - Remove the confidentiality accorded to nuclear operators and instead be wholly transparent. The industry must fully comply with this and not seek to hide behind commercial confidentiality as a means of keeping info from the public.
- xiv <http://content.govdelivery.com/bulletins/gd/UKHSE-58006>- on
- xv *Critics challenge UK regulator on Fukushima safety reviews* *Inside NRC*, Volume 33 / Number 9 / April 25, 2011
- xvi French post-Fukushima audits to cover all nuclear facilities *Nucleonics Week* Volume 52 / Number 19 / May 12, 2011
- xvii Demarch de dimesionnement des ouvrages EPR vis-a-via de risque lie aux chutes d'avions civil (*Assessment of the operational risks and hazards of the EPR when subject to aircraft crash*) Brief for Greenpeace International by Large Associatged (report ref. no R3150-AIRCRAFT IMPACT 18 May 2006)
- xviii POST Report 222 July 2004 Assessing the risk of terrorist attacks on nuclear facilities Reactors <http://www.parliament.uk/documents/post/postpr222.pdf>
- xix <http://www.nrpa.no/dav/9d9004bb5b.pdf> for article see http://www.norway.org.uk/News_and_events/Current-Affairs/sellafield/
- xx <http://www.greenpeace.org.uk/files/pdfs/nuclear/GPUKNPSConsultationResponse.pdf>