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21 August 2002

By fax 020 7717 6884 & post

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Dear Ms Tebb

Questions arising from the recent gas circulator problems at Torness & Heysham 2 nuclear power stations

Following the telephone conversation on Monday 19 August between yourself and my colleague Rick Le Coyte, I am sending you our list of written questions relating to Torness and Heysham 2 nuclear power stations as you requested.

I would appreciate an early reply so that Greenpeace may further communicate to Secretary of State Patricia Hewitt who has been sent a copy of this letter.

I have set out our questions on a topic-by-topic basis and it would be helpful if you would adopt the same notation for your response. If there are reasons restricting your answers to particular topics then I would appreciate it if you could clearly state the reasons for this.

Many thanks

Yours sincerely

Peter Roche
Greenpeace UK

1st & 2nd circulator failures at Torness

For purposes of clarification, please could you confirm that:

- a) the first gas circulator failure occurred in May in Torness R2 reactor and resulted in an immediate shut down of that reactor;
- b) the R2 reactor has remained shut down since that time;
- c) the reason that R2 was closed down in May was because excessive vibration was detected in one of eight circulators in that reactor;
- d) subsequent withdrawal and inspection of the circulator revealed that an impellor blade had broken away from its hub ?
- e) when the second Torness reactor (R1) was shut down on or around the 14th August, was this because a gas circulator of R1 also developed excessive vibration?
or
because the results of the inspection of the other circulator (mentioned in d above) indicated a potential for the development of a similar defect – ie a generic design/ageing defect of a feature of the circulator design?

Cause of the circulator failure

I note from the Periodic Safety Review of Heysham 2 and Torness nuclear power stations (February 2001) that between 1992-1994 and in 1997 problems were encountered with five gas circulators at the Heysham 2 station which is virtually identical to Torness. These problems occurred at certain guide vane settings, although the actual cause of the vibration was not positively identified at the time. Also, at Torness an increased level of vibration was observed in one circulator.

Relating to these past difficulties with the gas circulators could you please state:

- f) If either the gas circulator that failed at Torness in R2 or the circulator which was reason for shutdown of R1 was the same circulator that had been previously identified to have vibration problems in the Periodic Safety Review of February 2001?

With regard to f) above, are you able to state with certainty that British Energy has correctly identified the fault or faults now experienced with the two Torness R1 and R2 circulators, particularly:

- g) is the same fault known or believed to be shared by both Torness circulators; and , if so
- h) is the fault or defect considered to be a potential fault/defect that could occur in:
 - i) all gas circulators installed at Torness
 - ii) all gas circulators installed both at Torness and Heysham and/or
 - iii) in gas circulators installed at other AGR reactors ; and
- i) please provide a full description, so far as you are able, of the fault(s) to the two subject circulators at Torness?

On the assumption that the fault with the two circulators at Torness is common to both circulators, we are particularly concerned that the Heysham 2 reactors continue in operation. As I understand it, these reactors are equipped with identical circulators that have undergone the same maintenance and operational regimes as those at Torness.

Would you therefore please

- j) explain why the reactors at Heysham 2 have been permitted to continue in operation when a potential failure mechanism may be present in each of the 16 circulators at Heysham?

I would also be interested to know:

- k) why Torness R1 was permitted to continue in operation until August following the failure of the R2 circulator in May?

I also understand from British Energy plc's Output Statement for July that a gas circulator was replaced at Heysham 2. Please can you tell me whether:

- l) it is now established that the reason for this Heysham 2 replacement had any cross linkage to the circulators fault(s) experienced at Torness?

Relating to the continuing operation of Heysham 2 (mentioned in j above), and the continuing operation of R1 at Torness until August, please can you tell me whether:

- m) it was entirely at the operator's prerogative that these reactors were closed (R2 Torness) and permitted to continue in operation (R1 Torness and Heysham 2); and/or
- n) to what extent was the NII involved and did this involvement of the NII include any consideration of the potential loss of generating revenue and the economic position of British Energy?

In view of these recent events at Torness, does the Inspectorate

- o) continue to endorse its PSR conclusions on the '*acceptability of continue operation for a further 10 years*' for both Torness and Heysham 2;
- p) (for which I assume the follow-up work agreed at the PSR has been satisfactorily progressed by the operator) I would appreciate a description of this work as it applies to the circulators at either Torness and/or Heysham 2?

Circulator failure during operation & at depressurisation fault conditions

I understand that British Energy undertook and submitted a probabilistic safety assessment (PSA) as part of the Periodic Safety Review reported in February 2001 and I assume that a circulator failure during normal operation and depressurisation fault conditions has been assessed as part of the PSA. Referring to the most recent PSA could you please provide me with:

- q) the projected frequency or frequencies for the circulator fault sequence(s) experienced at Torness;
- r) state whether the loss of a circulator impellor blade is a recognised fault event, either initiating or a stage within a prescribed fault sequence; and
- s) outline how the fault sequence is forecast to cascade beyond the impellor blade detachment including, if relevant, for:
 - a) the blade and/or other debris breaching through the circulator isolator dome and outer casing, thereafter impacting into the feed boiler trunking and the feed and decay heat pipes;
 - b) similarly, transmission of circulator debris into the main gas flow, promoting a blockage/restriction of the fuel channel gas flow and how this might subject the fuel to its limit temperature of 1350°C or thereabouts;
 - c) break up of the circulator and release of lubricating oil into the reactor primary circuit;
 - d) disintegration of the circulator, failure of the circulator retention, ejection of the circulator and the corresponding major beach of the reactor primary circuit ?

Finally, with respect to the Radiation (Emergency Preparedness & Public Information) Regulations (REPPiR), under which I understand the pertinent local authorities at Torness and Heysham are presently preparing off-site emergency plans (although I appreciate that these off-site plans may not yet be in place by both authorities)

- t) to your knowledge was the immediate shut downs of the R2 and R1 reactors at Torness notified to the local authority at the time of the circulator fault discoveries, giving a potential for the declaration of an off-site Radiation Emergency (Reg 13(2) of REPPiR);
- u) was there sufficient cause for concern at Heysham 2 for its operator to notify the local authority; and
- v) if, for example, one of the scenarios referred to in s (above) had resulted in a radioactive release sufficient to declare an off site Radiation Emergency for what reason(s) are the Detailed Emergency Planning Zones at Heysham (1km) and Torness (3km) so different?