

Nuclear Free Local Authorities Secretariat

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Mike Weightman
HM Chief Inspector,
Nuclear Installations Inspectorate
Office for Nuclear Regulation
C/o Health and Safety Executive
Redgrave Court, Merton Road
Bootle, Merseyside
L20 7HS

15th September 2011

Emailed to: FukushimaONRReport@hse.gsi.gov.uk

Dear Mr Weightman,

ONR NUCLEAR SAFETY REPORT ON THE IMPLICATIONS OF THE FUKUSHIMA DAIICHI INCIDENT – ADDITIONAL NOTE TO THE OFFICIAL SUBMISSION BY THE NUCLEAR FREE LOCAL AUTHORITIES IN ADVANCE OF THE FINAL REPORT

In addition to the main points made by the NFLA and submitted on the 1st September to the ONR, I would also like to formally submit this additional note, which considers marine pollution issues from the Fukushima incident in relation to the ONR's Generic Design Assessment (GDA) for the two proposed new nuclear reactor designs. It has been prepared for the NFLA by the independent marine pollution specialist Tim Deere-Jones. It should be considered in conjunction with the main NFLA submission, and I hope there is adequate time to consider it.

Yours sincerely,

Sean Morris
NFLA Secretary

Additional note to NFLA submission to the final Weightman review - recommendations arising from lessons learned from the Fukushima Daiichi event.

Tim Deere-Jones: Marine Pollution Consultant: September 15th 2011.

In the event of:

- A: Reactor or cooling pond Loss of Coolant Accident (LOCA) event requiring the use of Fukushima type volumes of Emergency Cooling Water.
- B: Severe flooding of sites (tidal bore, storm surge, tsunami, excessive rainfall (lets not forget the unusual path of Hurricane Katie).

The following extracts from the GDA are relevant:

GDA ASSESSMENT Report UK EPR-05 Assessment Report: Aqueous Radioactive Waste Disposal and Limits

Page 25: Para 118

EA say: "We have not considered at GDA other site liquid discharges such as surface water. The design of such systems will be site specific and there should be no contamination in normal operation. We will

review site drainage at site specific permitting and, as a minimum, require accessible sampling points at final discharge locations for confirmation spot sampling.”

Annex 1 (Fig 1) of the same document shows collection and management of three liquid effluent streams:

- A: Primary Liquid Effluent,
 - B: Spent Liquid Effluent,
 - C: Drainage Water from Turbine Hall.
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GDA Assessment Report AP1000
Assessment Report: Aqueous Radioactive Waste Disposal and Limits

EA list five sources of aqueous radioactive waste (Paras 35 – 46):

- A: Reactor Coolant System Effluents
- B: Building floor drains and sumps
- C: Detergent wastes (sinks, showers etc)
- D: Aqueous chemical wastes (laboratory and other small volume sources)
- E: Steam Generator blowdown wastes

And at Page 15: Para 49

EA say: “We consider that all sources of aqueous radioactive waste have been identified”.

And at Para 57 (page 16)

EA say: “AP1000 has five types of tanks for collecting aqueous radioactive waste”

- A: Reactor Coolant drain tank volume= 3.4 cubic metres
- B: Effluent Hold up tanks volume= 2 x 106 cubic metres
- C: Waste hold up tanks volume= 2 x 57 cubic metres
- D: Chemical waste tank volume= 34 cubic metres
- E: Monitor tanks (42 days storage) volume=6 x 57 cubic metre

TOTAL VOLUME.....= 705’4 cubic metres

Conclusions:

It is evident that the information given in the GDA’s Aqueous Radioactive Assessment Reports is relevant to only “normal operations”.

The GDA Aqueous Radioactive Assessment Reports fails to address LOCA response and the potential for massive Emergency Cooling Water (ECW) arisings, and does not conduct an analysis of the potential damage to site infrastructure, storage tanks or drainage systems due to unforeseen circumstances.

The GDA Aqueous Radioactive Assessment Reports fail to address the issues surrounding the necessity for the provision of capture/retention/treatment capacity for hundreds of thousands of cubic metres of ECW generated over a 6 month (and ongoing) period

Thus, at Fukushima Daiichi an unknown volume of ECW already leaked into environment.

From September 6th to 11th TEPCO press statements say that:

- since June 2011, when filtering systems were finally installed, they have managed to decontaminate 85,000 tons of highly radioactive water (HRW);
- 110,000 tons of HRW remains in basements of the reactor buildings 1,2 and 3;
- ECW still being applied daily to Reactors 1, 2 and 3;
- there is growing concern that basement HRW may be leaking into the sea via groundwater flows;
- concentrated nuclear waste generated by filtration treatment of 85,000 tons of HRW now occupies 70% of site dedicated, 800 cubic metre, waste storage capacity. (Waste generated so far thus equals 560 tonnes);
- TEPCO states the need to review cooling efforts in light of the continuing ECW applications and nuclear waste generation.

Please also note:

- 85,000 tons +110,000 tons = 195,000 tons captured/retained ECW (no calculation has been offered for volume lost to the environment);
- 85,000 tons HRW treated in 3 months = approx 1000 tons per day = thus it will require approx 110 days to clear the existing backlog (not counting ongoing applications of ECW);
- Basements plainly acting as storage tanks;
- Fear of leaching of HRW;
- Evident that the nuclear waste produced by filtration treatment of remaining 110,000 tons of HRW (not including ongoing applications of ECW) is going to overwhelm site storage capacity.

NFLA Recommendations to the ONR in this area:

- Site drainage (with specific relevance to emergency situations including LOCA response and inundation) should be made a GDA issue and NOT be determined on a site specific basis.
- The GDA should review reactor basement design and construction in order to confirm that, if they are to be used for collection and storage of spilled reactor and/or cooling pond coolant and ECW, they will prevent leaching, facilitate the monitoring of the HRW and escaped coolant and be provided with appropriate equipment such as pumps, gauges etc.
- HRW capture/retention, storage and treatment capacity should be made a GDA issue and NOT be determined on a reactor specific or site specific basis. It should be thoroughly reviewed in the context of the Fukushima event.
- The storage capacity for highly concentrated wastes generated by the filtration treatment of HRW should be reviewed by the GDA with a view to ensuring that, in the event of the need to filter treat high volumes of escaped coolant and contaminated ECW, there is sufficient storage capacity for the ensuing highly concentrated radioactive waste.