John Ainslie

From: John Ainslie **Sent:** Thu 7/23/2009 1:42 PM
To: Rob Edwards
Cc:
Subject: Shiplift hazard
Attachments:

Rob,

I am looking at the shiplift documents again. There are two obvious omissions –

No mention of dispersal of reactor contents

No mention of the probability of nuclear yield

I can't think of an easy way of addressing the issue of nuclear yield but there are grounds, from within these new documents, to highlight the risk of a combined reactor/missile accident.

The AWE assessment calculates the risks to the public from the dispersal of Pu and does not include the reactor contents. In describing the scope of the assessment (page 5) it says:

"The RPRA assessed the risks to the public of a release of plutonium (pu) from the SWS. The radiological hazard from an NRSP [reactor] accident was not considered".

The Accident Probability Assessment says:

"all large aircraft impacts are assumed to directly lead to a primary Loss of Coolant Accident (LOCA), but in this assessment they are assumed to lead to an explosive reaction from the SWS and a subsequent release of Pu" (p xii)

A large aircrash would lead to the dispersal of a proportion of the reactor contents, from the LOCA, plus Pu from warheads, but this assessment is only looking at Pu dispersal.

A torpedo accident could damage the reactor (p 8). The missiles are much nearer to the reactor than the torpedo compartment so the risk of damage to the reactor from the detonation of all the missiles would be greater. There is a serious risk that a missile explosion would breach the primary containment. In a Primary Containment Failure accident the entire contents of the reactor can be dispersed in a short period of time.

The diagrams in Annex A include a number of sequences in which there is a Primary Containment Failure accident which subsequently leads to a missile/warhead explosion. If the submarine rolls by more than 90%, following an aircrash, then there can be prompt criticality leading to a failure of the primary coolant circuit (prompt crit/fail of prim cct/frags generated). Fragments from the reactor could then cause a missile explosion (Annex A p 7). Dropping a load or the collapse of a crane can also result in prompt criticality (Annex A p 13 &14). In these cases the reactor contents would be dispersed as well as the Pu.

If the consequences are close to the tolerable criterion with just Pu dispersal, what would they show if the reactor contents were added ?

John

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