

From: Bernard White
 To: Mahendra Shah; Smith, Jeffrey
 Date: 1/15/03 9:47AM
 Subject: Re: Cask Layout Issues

In talking iwth our research PRA person, he suggested using this angle, because one wants to come in steep enough to hit it but still be able to control the plane. They said that above an angle of about θ , the plane is not near as controllable. Ex 2

Bernie

>>> Mahendra Shah 01/14/03 01:55PM >>>
 Jeff:

I believe we should use the maximum spacing of the HI-STORM cask as 16'-0", which is the maximum spacing for the proposed PFS facility, with 4000 casks in a 2 x N rectangular pattern. For the HI-STORM TSAR cask minimum spacing criteria of 18'-8" for a square pattern cask layout, the number of casks would generally be 4 to 9, and the probability of a large commercial jetliner impacting a cask is less than compared to the PFS layout which has 4000 casks. Ex 2

Therefore, the reasonable approach is to consider the maximum cask spacing of 16'-0".

As for the angle of attack, I think we should consider the maximum angle of θ . If we still have a problem, we could narrow it down to a lower value, based on probability studies by the RES. Ex 2

Thanks.

Mahendra

>>> "Smith, Jeffrey" <jasmith@sandia.gov> 01/14/03 01:09PM >>>
 Mahendra and Bernie:

In regard to my question yesterday about the cask layout/spacing. The figure below (let me know if it does not come through) is how I understand the site in Utah is going to be.

<<...OLE_Obj...>>

The HI-STORM TSAR (Section 1.4) discusses the stored layout. They list minimum pitch distances of 13.5 ft and 38 ft between the two isles of casks (for the 2 by N array). The minimum pitch distances for a square layout is listed as 18'-8".

These are minimum distances. As you can see the site in Utah is not using the minimum. In my discussion this morning with Mahendra he suggested that we examine the case where the 18'-8" distance is the "maximum" minimum distance. As I understand that, we will examine the case of the 18'-8" spacing (leaving an approximate minimum clear distance between the casks of 7.67ft) as the most likely reasonable scenario. From Greg Bessettes analysis this would require that we handle cask-on-cask impacts at velocities up to Ex 2

Also, Mahendra and I did discuss briefly the cask tipping issue again. I still believe that the Bob Kalan has been working on a hand calculation that I believe will demonstrate this clearly. I am hoping to fax Ex 2 E/86

Portions Ex 2

that to you today. With the 4ft clear space being the most likely impact, I don't believe the tipping was a real issue. However, if we change that clear space to 7.67ft (and the cask velocity at that distance being as much as the tipping MIGHT be an issue. The is based on the jetliner impacting the cask. If we have tipping and horizontal velocity, we need to re-evaluate what velocity we are using for the 7.67ft separation distance.

EX2

I am exploring this and will follow this with more information soon.
Jeff

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Portions EX2