

From: "Sprung, Jeremy L" <jlsprun@sandia.gov>
To: "Jack Guttman" <JXG@nrc.gov>
Date: Thu, Feb 28, 2002 6:08 PM
Subject: RE: Draft NRC Cask Sabotage Study Proposal (J5412) is attached

Jack:

Question 1: Since a scenario must specify a location, we will calculate a MACCS population distribution for that location using the latest version of SECPOP and 2000 census data. We can in principle run each scenario at each of the 17 ISFSI sites. As stated in my earlier email today, the dependence of consequences on particle size distribution and on the distribution of radionuclides within this distribution can be calculated. Since in MACCS each particle size bin can have a different deposition velocity, the dependence on deposition velocity is also calculated.

Question 2: These calculations are bounding calculations. Use of 100 % rod failure with an assumption of an undamaged cask and canister is clearly quite conservative for impact scenarios where cask and/or canister deformation could be substantial if 100- % of the rods are failed by impact; but could be reasonable for fire scenarios where all of the rods and the cask could be failed without significantly changing the geometry of the cask.

-----Original Message-----

From: Jack Guttman [mailto:JXG@nrc.gov]
Sent: February 21, 2002 5:22 AM
To: jlsprun@sandia.gov
Cc: bahawki@sandia.gov; carlope@sandia.gov; djammer@sandia.gov; jasmith@sandia.gov; kbsoren@sandia.gov
Subject: Re: Draft NRC Cask Sabotage Study Proposal (J5412) is attached

Jeremy,

I just skimmed the program plan. It looks very good. I will transmit it to the others for comments so that we can approve it quickly.

I have the following quick questions.

Q1.

Task 1.1E: Consequence Calculations (12 MWs)

The MACCS code will be used to estimate the radiological consequences that would result from the hypothetical accident scenarios examined by Tasks 1.1A through 1.1D. Population data for these calculations will be developed by performing POPSEC calculations using 2000 census data. Meteorological data will be obtained from two sources: (a) from a site wind rose if one is available, and (b) from the MACCS MET file for the nearest National Weather Service Station. Because the sabotage attack may cause radioactive materials to be released to the environment before an emergency evacuation

Portions Ex2
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can be carried out, possible emergency response actions will be reviewed to develop MACCS emergency response input. MACCS calculations will initially be performed for the engine impact scenario and later of the landing gear and center fuel tank impact scenarios.

What population data will you be using? There are 17 ISFSI sites. Will you identify the population densities for all sites and select a few sites or bounding site for the analyses? Can MACCS calculate large particles falling to the ground? How are large particles handled? This will be more important for transportation events.

Q2.

Task 1.1Di: Undamaged Cask/Canister (1 MW)

Fission product transport will first be estimated for transport through a HI-STORM storage cask/canister which has lost containment (e.g., puncture failure) but not been significantly deformed by the large plane crash (i.e., cask/canister internal volumes and surface areas are not significantly altered by the crash). This task will assume that all of the rods in the cask fail and will use results previously developed for the HI-STORM cask by NRC project J5160. Why assume that all the rods fail? Is that best-estimate?

Q3.

Add to the SOW a statement that whenever possible, ongoing activities performed by RES will be used in this program. For example, RES will be performing detailed jet engine assessments (at SNL), such as the effective crash area. They are also looking at various airliner modeling (perhaps

)
Ex 2
Thanks.

I know a lot of work went into this plan.

Jack.

>>> "Sprung, Jeremy L" <jlsprun@sandia.gov> 02/20/2002 7:31:33 PM >>>

Jack:

The attached MS Word file gives the proposal text.
The attached Excel Spreadsheet is the Milestone Chart.

The costs are about right, perhaps a bit conservative if nothing much goes wrong.

The schedule is (I believe) likely to be quite optimistic. If nothing much goes wrong and all of the people in other organizations (persons not in our department) who are supporting this program can work as shown, then we have a chance of making the schedule that you set forth. If not, then schedules are likely to slip significantly.

We will discuss all of this in detail next Tuesday.

Jeremy Sprung

<<JGPlaneCrashProRev0.doc>> <<PlaneCrashGuttman1.xls>>

CC: "Sorenson, Ken B" <kbsoren@sandia.gov>