

**From:** "Sprung, Jeremy L." <jlsprun@sandia.gov>  
**To:** "White, Bernard" <bhw@nrc.gov>  
**Date:** 11/12/02 11:03AM  
**Subject:** Revised Cask/Threat Matrix is attached

Bernie:

Ken and I would like to discuss this matrix with you.

Jeremy Sprung

<<Scenario\_Cask\_Matrix.doc>>

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

Information in this record was deleted  
in accordance with the Freedom of Information  
Act, exemptions 2  
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11/12

### Package/Threat Combinations for Analysis

The following table indicates combinations of a package and a threat that SNL recommends be considered for analysis by the RAM Package Vulnerability Study. In the table, an X indicates package/threat combinations suggested for analysis by SNL; and a number (e.g., 1.1) indicates a package/threat combination specified by NRC for analysis and the number indicates the project task that calls for the analysis.

In constructing this table, the initial goal was to use each threat with at least one package.

If a package is very similar to a package that has already been analyzed, analysis of the second package was not recommended

Ex2

Package Type Purpose or Contents	Spent Fuel Casks						Other RAM Transport Packages						
	Storage			Transport			U	A-0109	BUSS	UNC-2901*	Mo-99, I-131	C/R	TRUPACT
Package Name	HI-STORM	NUHOMS 32P	TN-68	VSC-24*	NAC-UMIS	NAC-NLI-1/2							
Construction	SCoS/Can	CoS/Can	MonoS		SLS/UCa	SDULS/MI			MonoS				SFS/S
Impact Jetliner*	1.1	X			1.4								X
Fall from bridge Collision*					X*								X*
Crush		X				X							
Small Plane Truck Barge					1.5	1.5	1.6						
Fire					X						X*	X*	X*
					X*							X*	X*
			X		X			X*	X				

- l. We believe this package is very similar to the HI-STORM cask and thus analysis will yield no new information.
- a. This package is designed to carry fresh fuel pellets or powder which can be dispersed easily which if dispersed pose little dose hazard because U is an alpha emitter.
- b. These three package constructions cover SF package types; packages that carry substantially less radioactivity probably are less attractive targets for jetliner impact.
- c. Severe impact may be able to fail the thin steel shells of these packages.
- d. Deliberate collision of another vehicle into any of the packages listed is not likely to lead to significant dispersal of contents.
- e. For bulk the delivery vehicle doesn't affect the CTH calculation
- f.
- g. If fire can fail this package.
- h. Multiple packages on package containing spent fuel or Pu in pipe overpacks could produce a release of concern.
- i.
- j. The Co metal in this package might become dispersable by
- k. Penetration of any package by will still produce a small swept volume and thus a small release.

Ex2

Ex2

Ex2 portions

Key to abbreviations: Cs/Sr = Cs/Sr capsules; Mo-99, I-131 = medical radionuclides carried in package; Cs/R = Cs on ion exchange resin; SConS/Can = steel-concrete-steel overpack with canister; Con/Can = concrete overpack with canister; MonoS = monolithic steel; SLS/M/Can = steel-lead-steel shell, metal seals, with canister; SDULS/M = steel-DU-lead-steel shell with metal seals; SFS/S = steel-foam-steel with inner steel shell.