

NEI described the process for determining target sets as follows:

Analysis identifies target sets that, if all targets within a target set are destroyed, could lead to significant core damage. Using these target sets provides a basis for evaluating the protective strategy and assessing the significance of issues based on the risk involved.⁵

The petitioners included a table provided by NEI that illustrates ten (10) sample target sets. See Table A-1, *Sample Target Sets* (reproduced below). The table shows that reactor core damage can be prevented if cooling water is supplied from any one of four possible sources listed: Normal (high pressure supply), safety backup (emergency high pressure supply), another safety back-up (low pressure

supply), and an additional back-up (alternate low pressure supply). In these sample target sets, each cooling water supply can be disabled by any one of five ways: (1) Power from the pump motor can be interrupted;

(2) Control for the pump and/or valves upstream and downstream of the pump can be lost;

(3) The pathway from a water source to the pump can be eliminated;

(4) The pathway from the pump to the reactor vessel can be eliminated; and

(5) The location of the pump itself can be rendered unusable such as by fire.

The petitioners state that NEI reported only one of the four ways of cooling the reactor need to survive the attack:

Each target set is developed to provide assurance that, if any element is protected,

public health and safety will not be endangered by a significant radiological release.⁶

The petitioners state that in 37 of the 81 OSREs conducted, the security forces were unable to successfully defend even one element of the target set from simulated ground assaults. The petitioners included names and details of several power plants that had failures.

The petitioners state that sample target sets illustrate the conclusions reached more than 20 years ago about the control building being an Achilles heel. The petitioners note that Target Set 6 in the table shows that knocking out the control element for all four water supplies can result in core damage.

TABLE A-1.—SAMPLE TARGET SETS

Structures, sys. & comps.	1	2	3	4	5	6	7	8	9	10
High Pressure Supply:										
Power					X			X		
Control	X	X				X				
Suction				X						X
Discharge			X						X	
Location							X			
Emergency HP supply:										
Power	X				X			X		
Control		X				X				
Suction				X						X
Discharge			X						X	
Location							X			
Low Pressure supply:										
Power	X									
Control				X		X				
Suction		X			X			X		X
Discharge			X							
Location							X		X	
Alternate LP supply:										
Power	X				X					
Control				X		X				
Suction		X						X		X
Discharge			X							
Location							X		X	

The petitioners state that an aircraft hitting the control building may destroy the control elements for all four water supplies, and much more.

The petitioners believe these target sets should be used to evaluate nuclear power plants for destruction caused by postulated aircraft impact and subsequent fire. According to the petitioners, this aircraft hazard evaluation approach mirrors the

approach taken for in-plant fire hazards. The petitioners believe the fire hazards analyses conducted by plant owners are 'living documents' in that proposed changes to plant procedures and proposed modifications to plant structures must be formally reviewed against to verify that protection against fires will not be lessened.

The petitioners assert the way to ensure adequate protection of nuclear

plants from aerial threats would be to replicate the fire hazards analysis process.⁷ The petitioners believe the NRC should define, as part of its design basis threat, the size and nature of an aerial threat that the plant must be protected against. As a minimum, according to the petitioners, it would seem to include general aviation aircraft since the post-September 11, airport security measures generally overlook

⁵ Nuclear Energy Institute draft report dated October 2000, "Safeguards Performance Assessment Program."

⁶ Nuclear Energy Institute draft report dated October 2000, "Safeguards Performance Assessment Program."

⁷ While the existing fire hazards analyses will be useful input to the aircraft hazards analyses, they do not eliminate the need for further study for two reasons: (1) The fire hazards analyses assumed that the postulated fire would be confined to a single room, whereas the aircraft impact and resulting fire(s) may affect multiple rooms, and (2) many rooms were summarily accepted as-is by the fire hazards analyses due to insufficient combustibles

being present to sustain a fire—assumptions invalidated by the large amount of fuel carried by aircraft. The fire hazards analyses will expedite the aircraft hazards analyses by defining the equipment needed to cool the reactor if the room is hit. If that equipment could also be disabled by an aircraft impacting the room, action will be required to eliminate that vulnerability.