SAFETY ANALYSIS REPORT

CHAPTER 8—ANALYSIS OF DESIGN EVENTS

SECTION 8.1 ACCIDENT ANALYSIS

8-2 Regarding "hanging bombs," the following information is needed:

(a) The number of training flights that the National Guard and Air Force conduct per year with live ordnance.
(b) The flight paths or routes of these training flights.
(c) The net explosive weight of the typical ordnance used.
(d) The probability of occurrence of live ordnance failing to release.
(e) The mechanism for failure to release.
(f) The emergency or contingency plans for failure to release live ordnance.
(g) The probability that a failure could result in an unintentional release of live ordnance over the PFSF ISFSI and result in impact to the facility.
(h) The consequences of such an impact if found to be credible.

RESPONSE

Responses to this RAI were prepared based on information provided to PFS by J.L. Cole of the National Air Traffic Controllers Association, Washington D.C.

(a) Training flights are conducted by the Department of Defense, which includes the U.S Air Force, U.S. Navy, U.S. Army, U.S. Marine Corps, and other nation's forces, in the UTTR (Utah Training Range). According to the U. S. Air Force, aggregate aircraft sorties flown in the UTTR for Fiscal Year 1998 (October I 1997 through September 30 1998) totaled 8,711. Approximately 15% carried live ordnance. Consequently approximately 1,000 to 1,500 flights per year carry live ordnance.

(b) According to the U.S. Air Force, aircraft departing Hill AFB, Utah use the DEVLIN I Departure (See attachment A) for transition into both the North (R-6404) and South (R-6402, 5, 6, and 7) UTTR ranges (See attachment B) for medium and high altitude missions. Only the South Range is of interest since it lies near the PFSF. The Aircraft departing Hill AFB use the Island 420 Departure (See attachment C) for the South Range low level missions.

F 16 aircraft departing from Hill AFB bound for the South UTTR range transition to Visual Meteorological Conditions (clear of clouds) at the north

end of Skull Valley and transit the valley from north to south en route to the ranges.

All other flight plans do not pass over or near the PFSF. U. S. Navy and U. S. Marine Corps aircraft flying from Fallon Naval Air Station, Nevada, enter the UTTR from the west. B-52 and other aircraft missions originating from bases other than Hill AFB depart their home bases and proceed direct to the UTTR via flight plan routes and enter the UTTR range from low level flight routes. These B-52 entries to the UTTR are usually from the north and west with coordination and clearance from Clover Control Air Traffic Control Facility.

Aircraft departing the Ranges for egress to Hill AFB use the Stansbury/Moser Recovery (See attachment D) or the Causeway Recovery (See attachment E). Of these two egress routes, aircraft only fly over or near the PFSF when using the Stansbury/Moser return route

(c) According to the U.S. Air Force, typical live ordnance consists of Mk 82 500 lb. (net explosive weight (NEW): 192 lb.) or Mk 83 1,000 lb. (NEW: 445 lb.) or Mk 84 2,000 lb. (NEW: 945 lb.) bombs.

(d) According to the U.S. Air Force, approximately 15% of the 8,711 sorties flown in Fiscal Year 1998 carried live ordnance. Michael Army Air Field is the designated primary airfield for aircraft landing with live hung ordnance that has failed to release. According to the U.S. Army, there were only five hung ordnance aircraft diversions/recoveries into Michael Army Air Field during 1998. Since only approximately 15% of the aircraft sorties carry live ordnance, a total of only five hung ordnance recoveries in 1998 for a total of 1,000 to 1,500 sorties (approximately 15% of 8,711) produces a probability for failing to release of approximately one in two hundred to one in three hundred. A failure to release does not mean there will be an inadvertent release or an inadvertent release and explosion. The UTTR has not experienced any unanticipated munitions releases outside of designated launch/drop/ shoot boxes.

(e) According to the U.S. Air Force, the most common mechanism (cause) for failure to release is a malfunctioning cart, which is a small cartridge that separates the bomb from its mount. Bombs can also fail to release due to a mechanical hang-up or becoming stuck in the mount. Electrical malfunctions in the armament wiring circuits can also cause a failure to release. Bombs will also fail to release if safing pins are not removed on the ground prior to departure for the UTTR.

(f) According to the U.S. Air Force, the first priority is to maintain aircraft control and then assess the situation and take appropriate action. Pilots contact Clover Control Air Traffic Control Facility and advise them of the

situation. When hung ordnance is encountered, the pilot has the option of either jettisoning the rack and munition on the range, if able, or recovering to base. Michael Army Air Field is the designated primary recovery base for hung ordnance. Pilots request clearance to Michael Army Air Field for a hung ordnance recovery/landing. Pilots maintain a stable flight path and remain in Visual Meteorological Conditions by avoiding clouds. Clover Control provides assistance as required and ensures Michael Army Airfield is prepared to receive the aircraft to include fire fighting equipment and medical personnel standing by. The pilot maneuvers the aircraft to the northwest of Michael Army Airfield, avoiding rapid or steep turns abrupt climbs or descents. Test facilities in the UTTR or any populated areas are avoided. Since the approach is from the northwest, west of the Cedar Mountains, Skull Valley is also avoided. A long straight-in approach with a shallow rate of descent is established to a full stop landing on runway 12 (to the southeast). Runway 12 is 13,125' long and 200' wide with a barrier cable at the end. After landing, Dugway Proving Ground explosive ordnance disposal personnel will inspect and safe the bombs.

(g) Based on information provided by the U.S. Air Force, the UTTR has not experienced any unanticipated munitions releases outside the designated launch/drop/shoot boxes within the UTTR. In addition, aircraft overflying the Skull Valley are not allowed to have their armament switches in a release capable mode. All switches are "Safe" until inside Department of Defense land boundaries within the UTTR. Master Arm switches are not actually armed until the aircraft are on the ranges within the UTTR where the bombs are to be dropped. In addition, each weapon tested on the UTTR has a run-in heading established during the safety review process. Footprints, time of fall, altitude at release, and release airspeed dictate the headings allowed. No run-in heading is currently over the Skull Valley area.

There has never been an unintentional release of live ordnance in Skull Valley or at the Skull Valley reservation. Procedures do not allow the potential for equipment to release ordnance over Skull Valley, only 15% of all missions carry live ordnance, and missions that experience hung ordnance are directed to Michael Army Airfield in a flight path that is not near Skull Valley. In addition, the possibility of future hung ordnance will continue to be reduced due to technological improvements, weapons reliability and training that has improved over time. Therefore, the probability of an unintentional release of live ordnance over Skull Valley is basically zero.

(h) Since an unintentional release of live ordnance over Skull Valley is not possible, as stated above in (g), an impact into the PFSF is not a credible event and would not result in any consequences.