

Aircraft Decontamination

—aviation unit considerations in an NBC environment

By CPT George C. L. Brown

I would like to outline those areas that are absolutes in the area of aircraft decontamination and propose guidance to limit contamination at aviation forward arming refuel point (FARP) sites. The faults or flaws in the procedures specified in FM 1-102, *Army Aviation in an NBC Environment*, must change to enhance aviation unit survival.

During my three and a half years in the 101st Airborne Division (Air Assault), I was directly in charge of (or witnessed) numerous aircraft decontaminations. On all of these occasions, I noticed much re-invention of the

wheel by various units. Most units discovered the guidance in FM 1-102 clearly violates the principles of NBC (figure 1). Of the NBC principles, violation of contamination avoidance makes the procedure unworkable.

There's no check for contamination at the first substation as shown in FM 1-102 (figure 1). Since the first station serves as a wash point, this may result in clean aircraft becoming contaminated. This defeats the purpose of the decon because the rotor wash will contaminate the aircraft (figure 2).

The hover-through technique is the main problem. The aircraft landing at

station one do not shut down. They proceed from station to station by hovering just off the ground. As an aircraft hovers, it lifts wet contamination just washed from the fuselage off the ground. It pushes contaminants down range ahead of itself (figure 3), contaminating personnel, other aircraft, and clean equipment on the site.

The rotor wash spreads contamination across the entire airframe (figure 2). Both of these problems violate the principle of contamination avoidance. Limiting the spread and control of contamination is essential in decontamination. Shutting down aircraft,

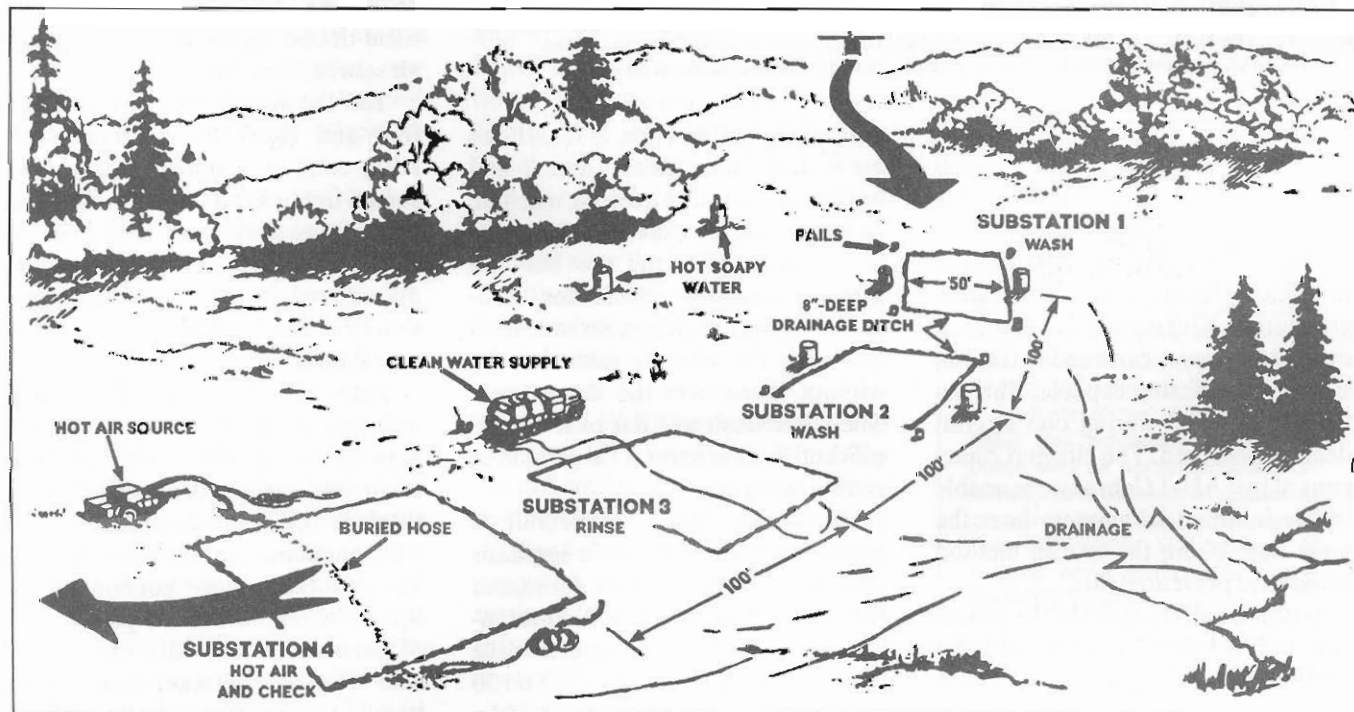


Figure 1. FM 1-102's hover-through decon will re-contaminate aircraft.

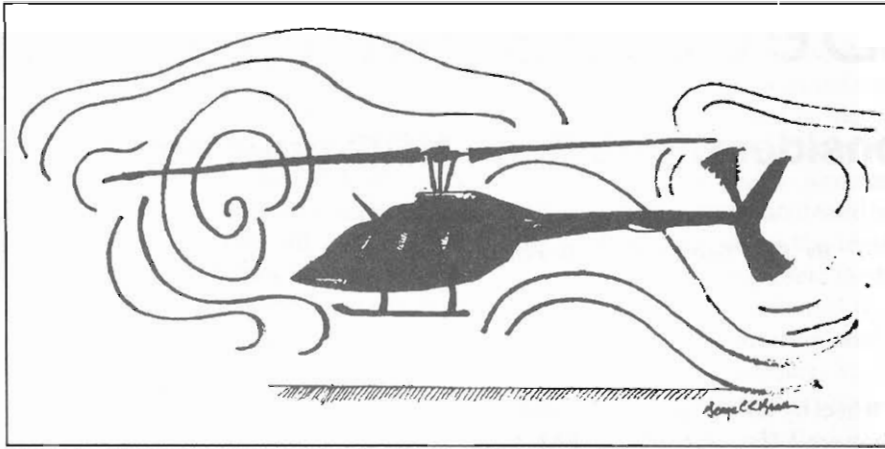


Figure 2. Rotorwash picks contaminants up off the ground; it re-contaminates the aircraft, and spreads contaminants across the airframe.

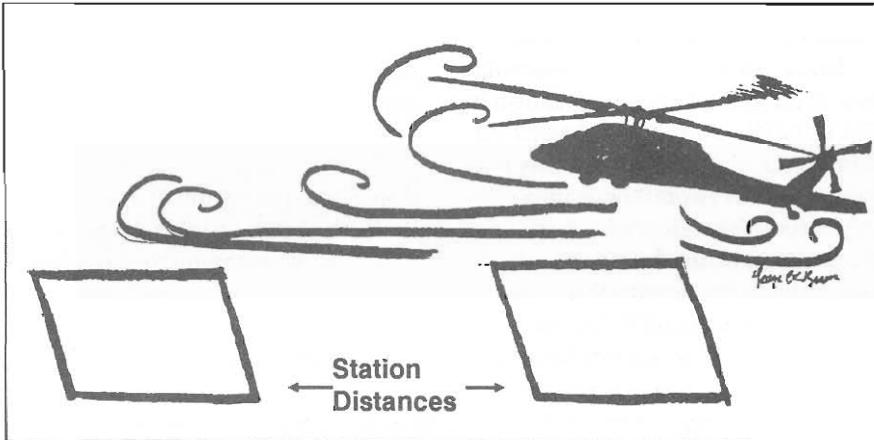


Figure 3. Landings and takeoffs force contaminants down range. This mandates aircraft must be towed from station to station. Station distances must be great.

conducting a check at station one, towing the aircraft from station to station, and ensuring stations are far enough apart solves these problems.

The rotor wash creates another problem by further contaminating the gun system. Kicking muddy dust back onto the weapon can render the gun system non-mission capable. This actually happened during one aircraft decon I observed. The clogged 20mm guns of two AH-1 Cobras were unable to fire in an aerial gunnery later the same day. Using the towing method could have prevented this.

Based on all the flaws in the procedure in FM 1-102, I came up with the method shown in figure 4. At station one the aircraft lands and shuts down. A check for contamination takes

place. If contamination is found, the crew dismounts, closes doors, and hooks the aircraft to a towing machine (a HMMWV, for example). The aviation unit supplies the tow bar and ground handling wheels for skid-mounted aircraft. If no contamination is found, the aircraft exits the site without flying over the decon area. The rotor wash will not pick up significant contaminants if the ground at station one is dry.

At station two, the aircraft is washed and rinsed, the main emphasis on the fuselage belly, skids, doors, and fuel ports. Take strict caution to ensure no water damage occurs. Place the SANATOR (M17 PDDEs) on 50 pounds per square inch (psi). Take special care to ensure no water enters

the pitot static system or electrical compartments. Each aircraft type has different areas susceptible to water damage. This is where you'll need the crew's advice. They help prep those areas at station one. Most water-sensitive areas can be protected with Army green tape (100 mph tape).

Decontaminate the towing vehicle wheels and wheel wells each time it tows another aircraft forward. Place super-tropical bleach (STB) on the ground between stations two and three to aid in the process.

Interior decon takes place at station three. Use hot, soapy water with rags and brushes in cargo compartments. Remove the seats in the cargo area so a more thorough decontamination can occur. In the cockpit, take special caution to avoid short circuits.

It's unlikely much contamination exists in these areas unless the pilot exited and re-entered the aircraft in the contaminated area. Pay special attention to the areas touched most: the cyclic, collective, foot pedals, and switch heads. Decon these with the M258 kit, M291 (individual/equipment decontamination) kit, or a hot air source, if available.

Tow the aircraft forward to station four and check for contamination. Also, conduct a systems check. Personnel unhook the towing vehicle and it returns to station one on a specified route. Once aircraft and weapons are operational, it exits the decontamination site. The aircraft at no time flies over the site.

After the decontamination, commanders must watch for desorption. Desorption is the rising of contaminants back to the surface of the fuselage skin. Less desorption occurs if decontamination takes place as soon as possible after contamination. Speed helps prevent the penetration of persistent agents into the aircraft skin. The only solution currently on hand to combat desorption is weathering. Aircraft that are still

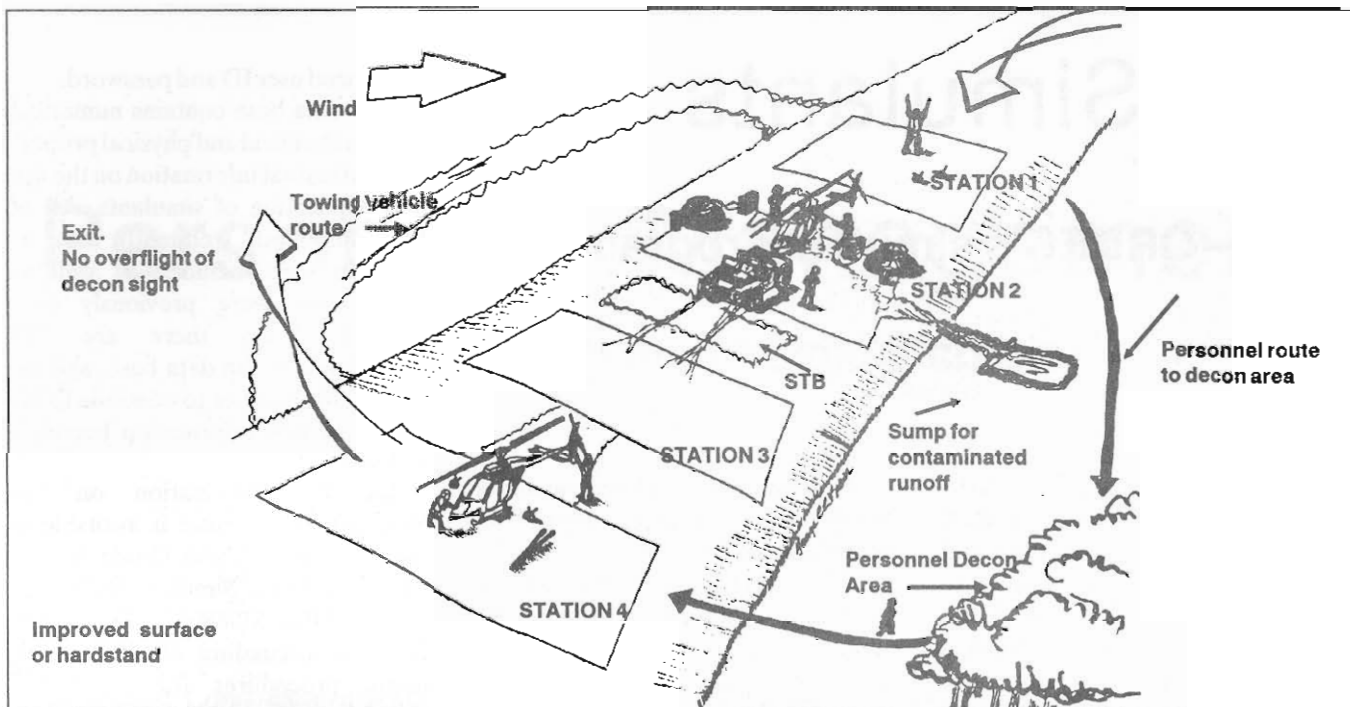


Figure 4. Aircraft are pulled through the stations.

contaminated should weather at another location after decontamination is complete.

Here are some considerations to limit the possibility of aircraft contamination. Aviation units will be highly vulnerable on the NBC battlefield. Passive measures to protect or avoid contamination of FAREs should be the commander's number one priority. The FARE is one of the most likely areas for chemical attacks to occur.

Since contaminated FAREs will result in contaminated aircraft, commanders must consider precautions to avoid or limit these circumstances. These are actions commanders can take to protect FAREs and limit contamination:

- Locate FAREs at multiple sites. This is difficult because of the constraints on the amount of class 3/5 personnel and the equipment units have available.

- FAREs must move often and plan measures to reestablish clean FARE locations after contamination occurs. One way is palletizing forward arming refueling equipment (FARE) systems with JP4 blivets and holding

them in reserve as spare systems. Cover these FARE systems with plastic to protect them from contaminants. If the FARE is contaminated, these reserve systems can serve to establish a clean FARE location.

- Establish a warning system for FARE operations. Units need warnings to alert incoming aircraft of the FARE's clean or contaminated condition. Also establish warnings to the FARE from the aircraft of its contaminated or clean condition. These signals can take the form of certain code words or light configurations by the aircraft or the FARE itself.

This warning system would aid in the avoidance or further contamination of clean aircraft, personnel, and equipment. Clean aircraft can be warned of FARE contamination and diverted to a clean FARE. Dirty aircraft could continue to refuel at the contaminated FARE sites until a decon site and a clean refuel site are prepared; or go to the hasty decontamination station prior to arming and refueling. This will avoid the spread of contamination.

Whether believed to be clean or dirty, check each aircraft at the FARE.

Train class 3/5 personnel in detection, individual, and hasty decon. These are most essential to the survival and continued combat effectiveness of aviation assets in an NBC environment. Aviation personnel must understand the principles of NBC in order to sustain their equipment by decontamination and avoid the hazards in an NBC environment.

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