Moving Ammo in the Winter

By TSgt Jeremy J. Koch, Keflavik NAS, Iceland

Cold weather operations can be tricky. Here, weapon loaders load an MK-82 general purpose bomb, onto an A-10.

This is a munitions tale from the great white North. It involves an inherently safe munition, but has the potential to affect any unit moving ammo in freezing weather.

The place is Keflavik Naval Air Station, Iceland. While the scope of the Air Force's mission in Iceland has changed in the last 15 years, the basic job for Munitions Systems troops remains the same. Among other duties, ammo personnel supply explosives to the two Air Force airframes operated out of Iceland: F-15C fighters and HH-60 helicopters. The F-15s are used to interdict potentially hostile aircraft encroaching on Icelandic airspace. Pararescue folks use the helicopters to rescue both downed aircrew and foundering sailors. In addition, pararescue personnel also need to fire a large amount of ammunition from their helo-mounted GAU-2/B mini-guns to maintain proficiency for hostile engagements. They fly at all hours, throughout the year. That means ammo troops have to deliver serviceable ammunition, on time, even during winter.

It was during one of these routine, but cold deliveries that things did not go quite as planned. The weekly ammunition resupply was ramping up for the delivery. The primary explosives route had been cleared of most of the previous night's snow. The vehicles had been checked out and were operational with all the necessary safety gear. The technical data had been consulted and the crew book filled out for a delivery of 15,000 rounds of 7.62 mm ammunition in M548 containers. Because of our location just south of the Arctic Circle, the day was short and the sun had not yet made its appearance.

Since this delivery did not involve a full pallet load of ammo, the cans were loaded on the Munitions Flight's 1.5-ton flatbed truck. Tie-down straps were run over the cans and the excess strapping was used to put an extra turn in the tie-down ratchet. The driver was assured of the load's security when he completed a final walk-around.

But then, on the way to see the Jolly Greens, it happened ... While negotiating a turn, the driver was suddenly relieved of his load — the entire payload was strewn across the frozen earth. Fortunately, the ammo was in Special Packaging Instruction configuration so the entire load remained sealed within the shipping containers.

What happened? The ultimate cause was icing — the kind of ice that magically appears on every horizontal surface during a snowstorm. You wouldn't think twice about scraping the ice off your windshield, but would you consider doing the same to your truck's bed?

It's important because of what happens to ice when you place stuff on it. Did you know that the melting temperature of *most* molecules decreases in relation to increasing pressure? Well, the opposite is true for water-ice. The melting point *rises* when pressure increases. This is why glaciers move and what makes ice-skating possible. The skater, with the help of gravity, puts considerable pressure on the ice while standing on the skates. This causes the ice to melt a bit at the point of contact. This, in turn, provides a wonderful lubricant of water on which the skater's blades ride.

This same phenomenon occurs with big, bulky ammo cans. The effect is a little different due to the construction of the container bottoms; but at 120 pounds per can, the pressure is enough to cause liquefaction of the ice.

So what can others do to ensure such an incident does not recur? The most obvious action is to remove ice from the equipment load bearing surfaces prior to loading (this includes forklift tines). Dealing with a wood truck bed? Well, attempting to remove all the ice from such a surface can prove to be an impossible task so there are other things that can be done to mitigate the problem. One near perfect solution is to use a minimum of three tie-down straps: one routed over the row of cans and the other two routed through the can handles, both before and behind each row. Since many munitions containers are not equipped with handles or other items allowing that type of tie-down configuration, a third option is to use a truck with a stake bed or pickup style bed.

Why weren't any of these options used that day? Because no one recognized the hazard potential before the incident occurred (at least no one made an issue of it). We hope by sharing this experience, we have done our best to shorten the learning curve of others who are working or will be working in icy climates. Shouldn't your unit be as prepared as possible?

Moving ammo in the cold ... can make a safe operation more challenging