September 14 2014

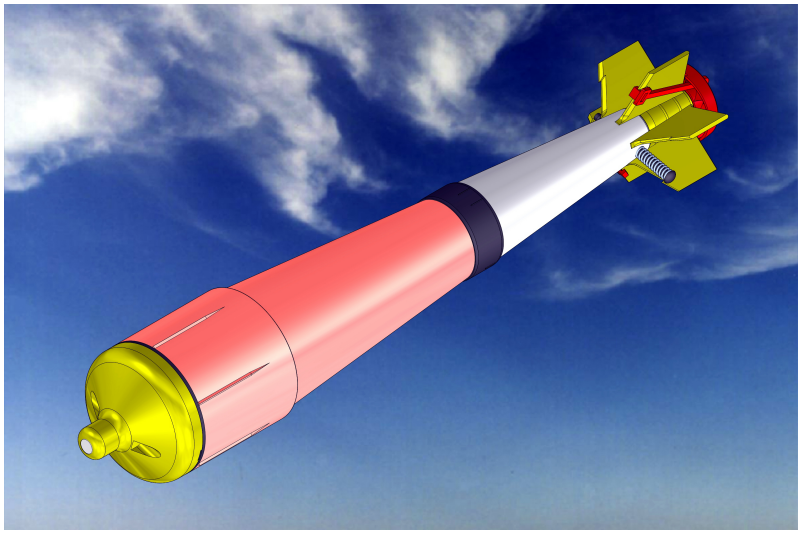
DeltaLancer System
Loading Procedures

The following are procedures to be followed for loading, and firing the DeltaLancer Snowlauncher System, used for avalanche control by Snow Avalanche Programs in British Columbia Canada.

The DeltaLancer system is comprised of three main parts

1) The fore-body 1.1 kg TNT pay-load
2) The arming tail fin assembly C/W locking ring
3) CIL Avadet High strength detonator

Parts 1 & 2 are fitted together by means of a counterbore indents in the forebody combined with a locking ring on the tail fin



Additional Equipment for loading

- Dry approved container for detonators
- Dry container for tail fins
- Federally Licensed magazine for 1.1kg TNT fore-bodies
- Federally licensed magazine for detonators
- Container for transporting fore-bodies from magazine to gun site

Prepare the gun for firing with approved CIL procedures

3. **Personnel**

Two people are required to fire the DeltaLancer system. The blasting crew consists of a team leader or gunner and one assistant. **No other personnel should be in the blasting area while loading and firing these rounds**

i) **Team Leader** - is responsible for the following:

a) Safety of the entire operation
b) Operation of the gun
c) Supervision of the blast area
d) Confirming the charge detonation
e) Preparing the rounds
f) Loading and firing the rounds

ii) **Assistant** - is responsible for the following:

a) Recording the shots
b) Double checking the system assembly
c) Observing the projectile in flight
d) Confirming base plate separation in flight
e) Confirming the targets and detonation of the charge

4. **DeltaLancer Loading Procedures**

Check to ensure the DeltaLancer fits properly in the gun barrel. Do this by manually pushing an inert assembled round or a fitted testing gauge made of wood, plastic, brass or aluminum, through the entire length of the barrel, both ways, to ensure there are no foreign objects in the barrel and there are no restrictions in the barrel

4.1 **Preparing the DeltaLancer for Loading**

On arrival at the launching device, proceed as follows:

a) Check fore-body for external marks, protrusions, dents, and general condition. The fore-body should be smooth, clean and free of any foreign grit or objects.
b) Check to insure the nose cone is snapped on all the way
c) Check to ensure the cap well is clear of any foreign objects and proper depth
d) Check general condition of tail fin. There should be no dents, creases or foreign objects on the outside of the fin.
e) Check the spring tension on the bore-rider pin. The pin should depress and

withdraw freely against the fin body.
f) Check to ensure the safety strap is properly engaged inside the rear impeller and connected to the back fins.
g) Check to ensure the impeller is properly fixed to the bottom of the tail fin.
h) Check to ensure the rubber washer is in place on the underside of the ferule

i) Check to ensure the detonator ferule is properly in place inside the top cup section of the tail fin.
j) Check to ensure there is no grit or foreign objects inside the of the top cup section of the tail fin
m) Check the high strength detonator. Ensure there are no foreign objects inside the open bottom section of the detonator. There should not be any rust or condensation visible. The yellowish primary charge of lead-azide should be visible inside the detonator, well down inside the aluminum shell
k) Place the detonator inside the detonator well with the open end facing out of the end of the well and the closed end of the detonator at the bottom of the detonator well.
l) review the procedures of connecting the tail fin to the forebody on the video link below.

http://www.delta-k.co.uk/Pages/DeltaLancerProjectileTmp.aspx

https://www.dropbox.com/sh/8c6ua9so6htu28u/AABEPq2KxC4J3ZT8pyb_2Tyta?dl=0

m) remove the safety strap from the back end of the fin and the impeller.

The assembled charge is now ready to fire. Follow WCB approved submitted firing procedures for appropriate gun.

n) Confirm detonation audibly and/or visually where possible

Always fire the DeltaLancer from engineer approved Protection, electric remote firing switch or remote location. Never stand beside the gun and fire the Classic DeltaLancer System. Always confirm with CIL prior to firing these rounds that your firing procedures are safe

5. **Safety Precautions**

a) The team leader and assistant(s) must be in contact at all times.
b) No flammable or sparking materials may be carried in the same containers as the explosives, detonators or tail fins
c) Only approved CIL Explosives parts may be used to fire this system
d) Only personnel directly involved in the shoot should be present when firing the DeltaLancer system
e) DeltaLancers should not be shot with firing pressures exceeding 350 psi
f) DeltaLancers should not be shot with firing pressures below 80 psi
g) Always check with the gun manufacturer for the maximum and minimum gun firing pressures prior to deciding on target pressures

6.**Deteriorated or Damaged Product**

If any significant damage is detected, to any of the components in the assembled parts, Do NOT Use these and advice CIL Explosives of the issue.

If any of the parts appear to compromised or deteriorated to any degree, Do Not Use These, and advise CIL Explosive of the issue.

7. **Wait time for Misfired Round**

CIL insists on a 30-minute wait time before approaching any misfired avalauncher round.

8. **Misfires and Disposal**

Refer to approved procedures for the jurisdiction working in
MSDS sheets for the fore-body, detonator and tail fin are available from CIL Explosives.
CIL Explosives provides on-site technical training service for all customers using this system