

Draft September 11, 2006 **(UPDATED OCTOBER 9 2006)**

At the ILC Power and Water Use meeting held on September 7 – 8, 2006 the criteria for the tunnels the beamline and service equipment was discussed in detail. Criteria for both the expected occupants and equipment were discussed.

The machine and tunnel configuration used in the discussions is as follows:

- A two tunnel Main Linac, and RTML with a Beam and Service Tunnel.
- A single Damping Ring tunnel, centered on interaction region, with four alcoves accessible during operations.
- A single tunnel with alcoves approx every 100M. for the Beam Delivery System. (no access during operations.
- Full Linac power with an alternate for operating under one half power.

The following two operational constraints will be assumed:

- The Main Linac beam tunnel will not be considered to have a ODH hazard due to the He.
- The air born radiation of the Beam Tunnel can migrate to the Service Tunnel with no harmful affects. The half-life is extremely short. There are some areas that may need to be treated slightly different.

The Service tunnel WB + DB temperature is based on the OSHA criteria for moderate work with no required rest periods.

Tunnel designs temperature and humidity levels based on northern Illinois dry bulb (db) and wet bulb (wb) data. While KEK is very similar to northern Illinois CERN and DESY has a lower wet bulb.

HVAC Criteria

Location	Temperature DB	Dewpoint	RH	Air Flow	Comments
-e Source	85F (29C)	<55F (<13C)	<35%	88fpm	Assumed for “Beam Off”, no criteria received yet
Damping Ring	104F (40C)	<55F (<13C)	<20%	88fpm	
RTML Service Tunnel	85F (29C)	<55F (<13C)	<20%	88fpm	
Main Linac Service Tunnel/ Beam Tunnel	85F (29C)/ not controlled 85F+	<55F (<13C)	<35%	88fpm	
BDS	85-90F (29-32C)	<55F (<13C)	<20%	88fpm	
IR Hall	85-90F (29-32C)	<55F (<13C)	<35%	88fpm	Assumed for “Beam Off”, no criteria received yet