

ILC POSITRON TARGET HALL CONCEPT

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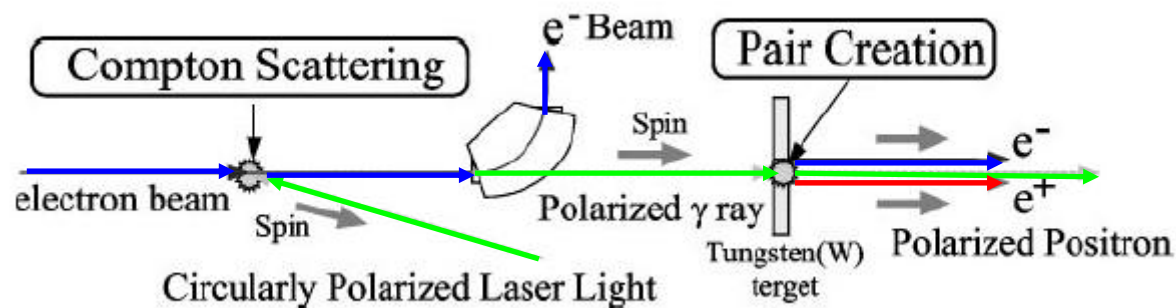
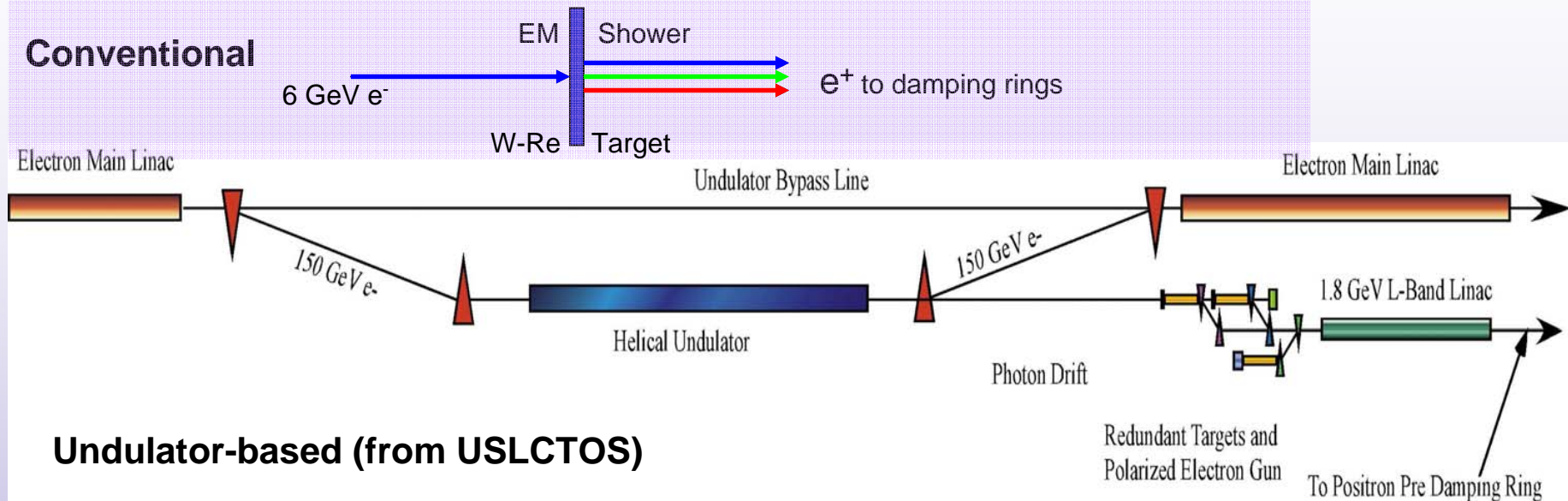
ILC GDE MEETING

Valencia – November 2006

Target Hall Issue

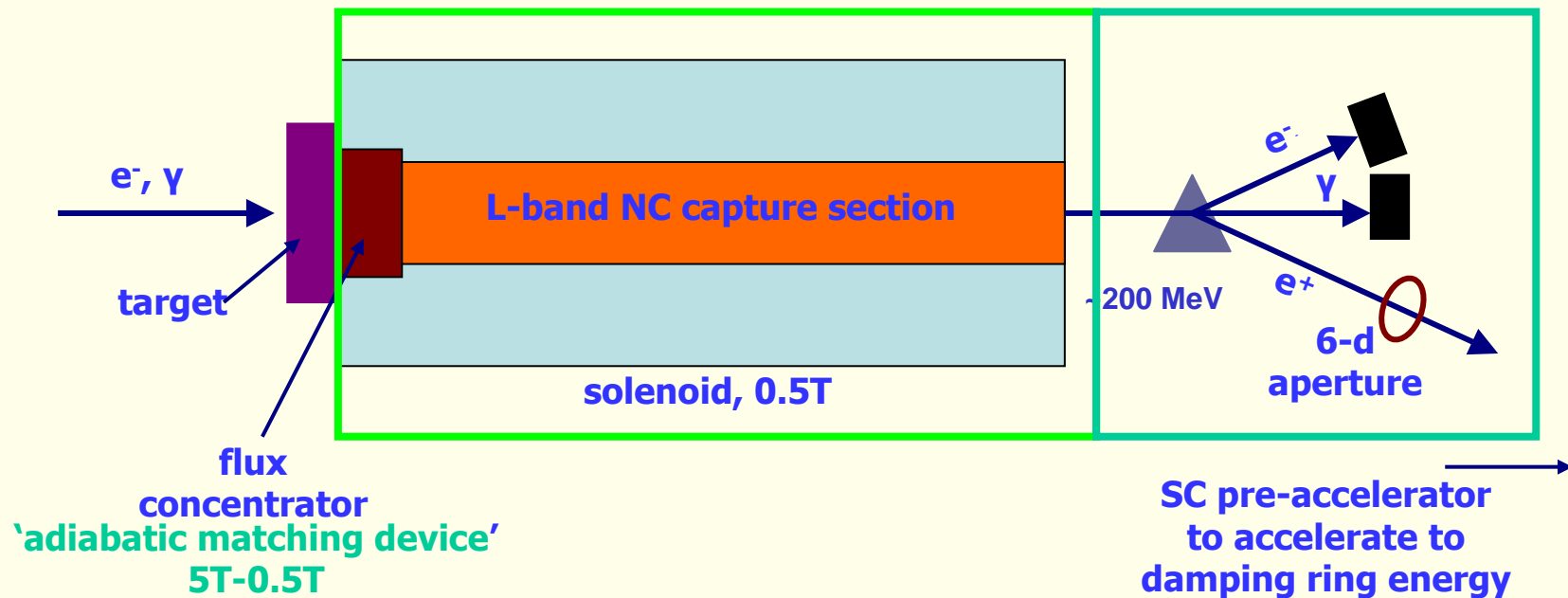
- ***High power beam hits metal target***
 - *~ 300 kW , photon beam*
 - *Multi-MeV*
 - *1st harmonic cutoff 10.7 MeV*
 - *Significant power in the first three harmonics*
- ***Expect target damage***
- ***Expect equipment activation***
 - *Target ~ 100 R/hour at 1-meter after beam shutdown*
 - *Downstream beamlosses*
- ***ASSUME THAT WE WILL NEED REMOTE HANDLING AND THE ABILITY TO DEAL WITH ACTIVATED STUFF***

POSITRON PRODUCTION SCHEMES

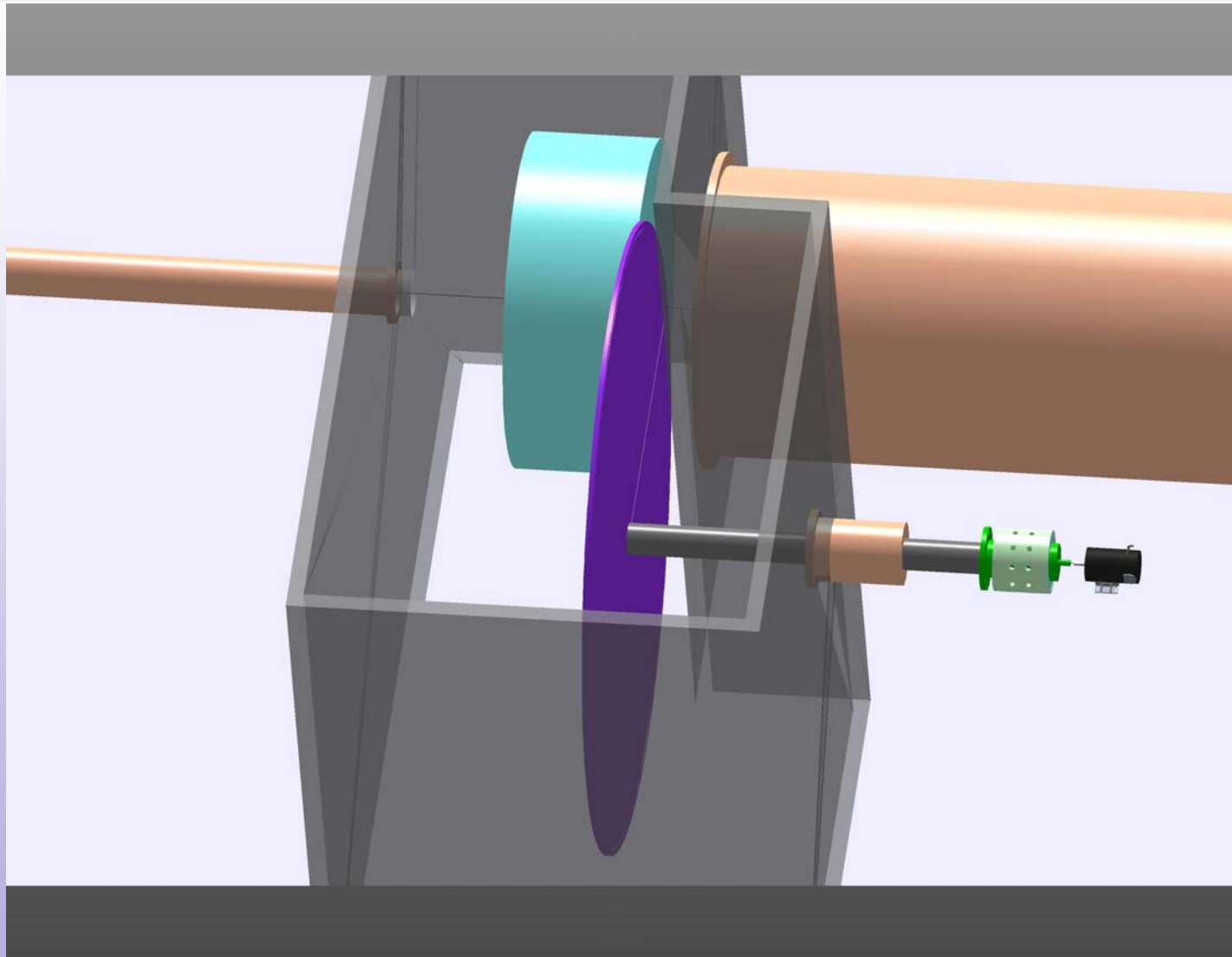


Radio-active sources – ^{22}Na
 1 curie = 3.7×10^{10} disintegrations/second
 (not really feasible)

GENERIC POSITRON SOURCE

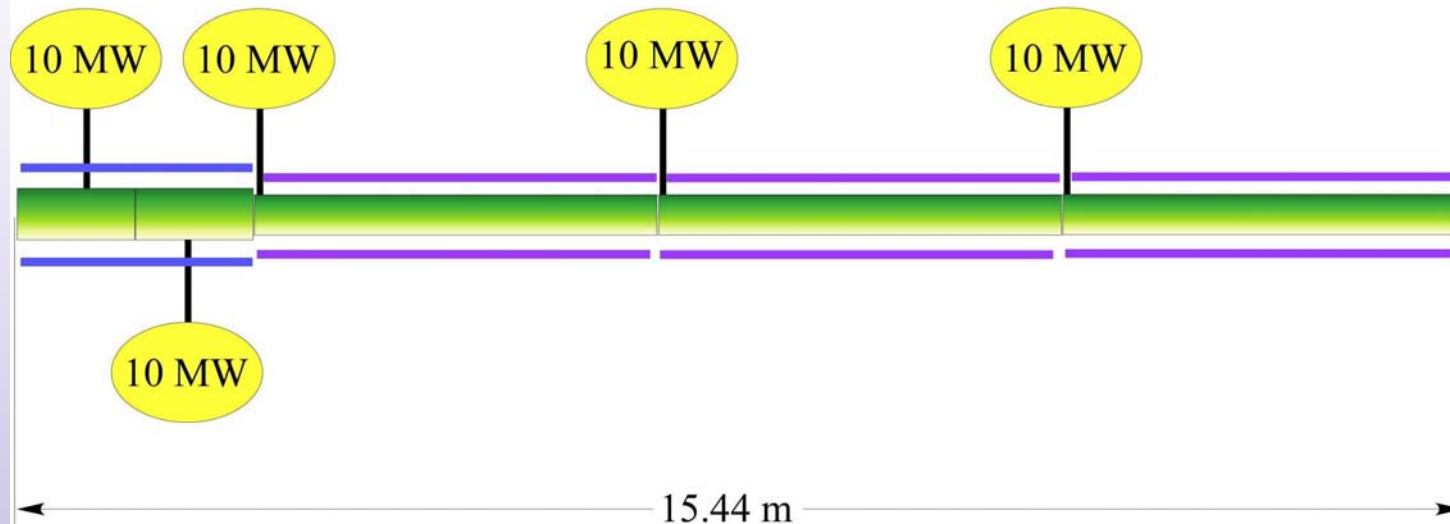


POSITRON TARGET



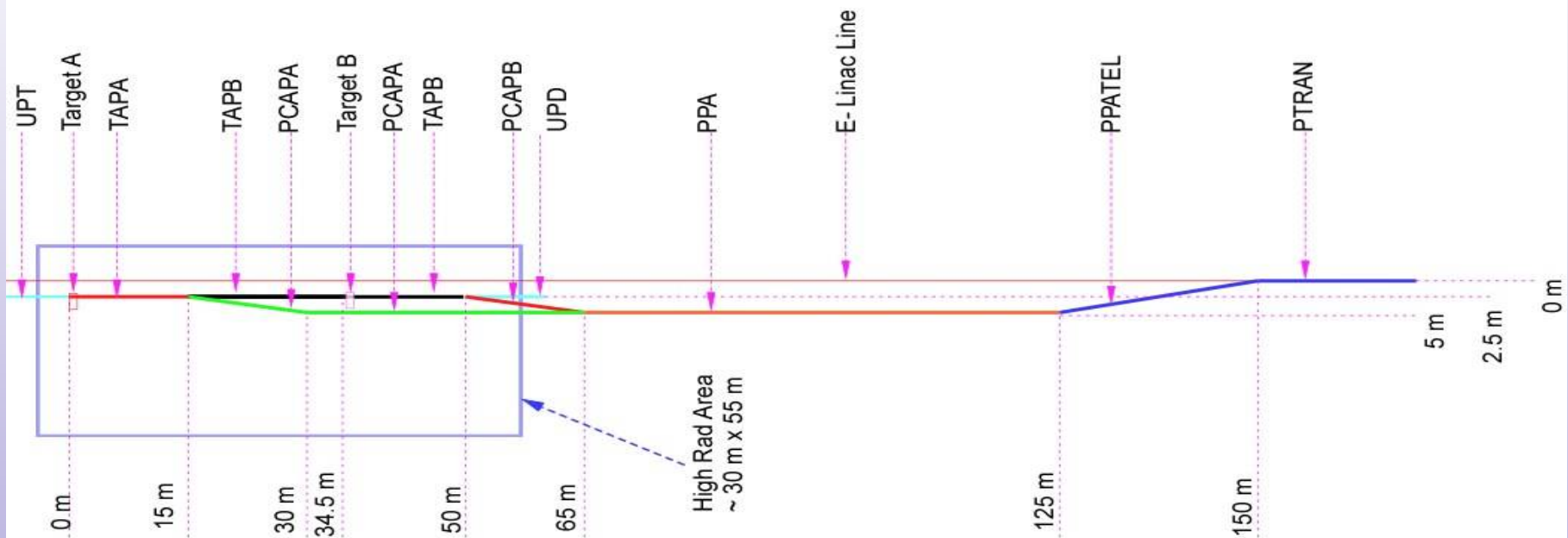
POSITRON CAPTURE

Proposed NC Positron Capture Accelerator System 0-125 MeV

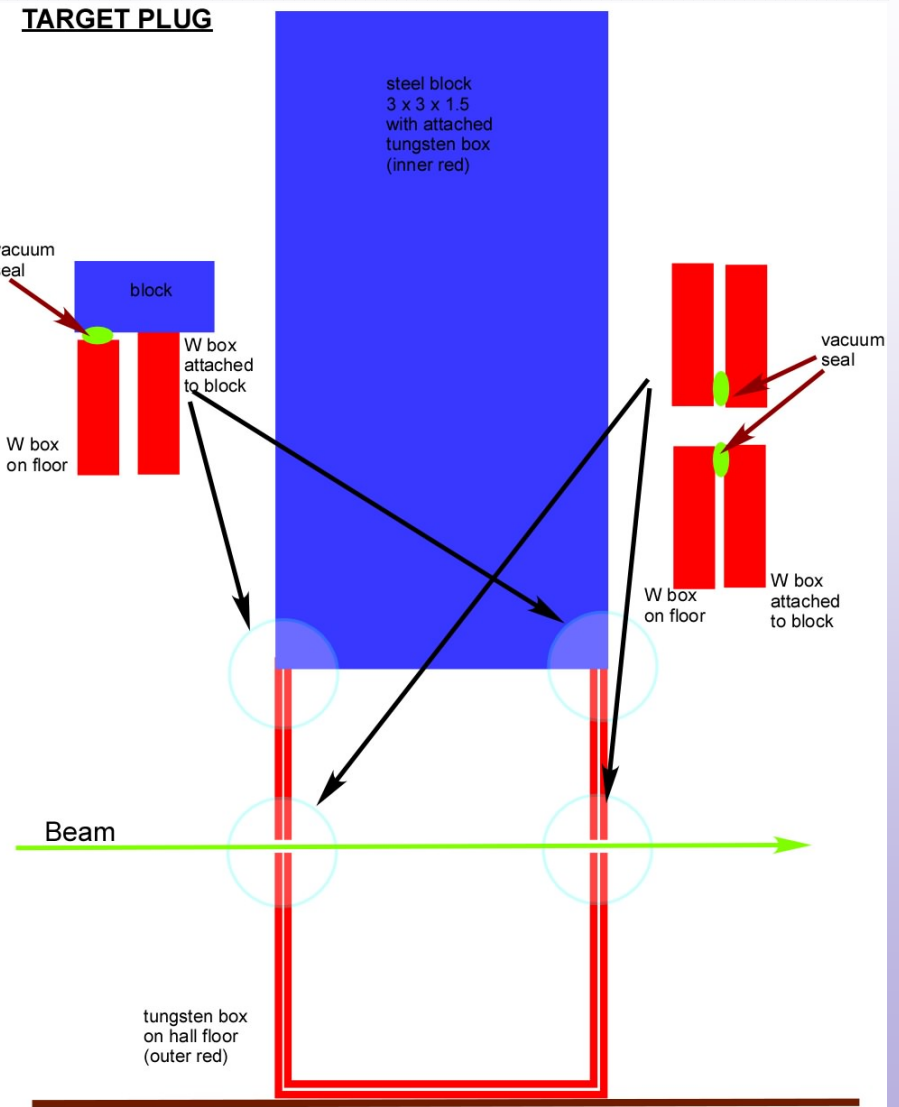
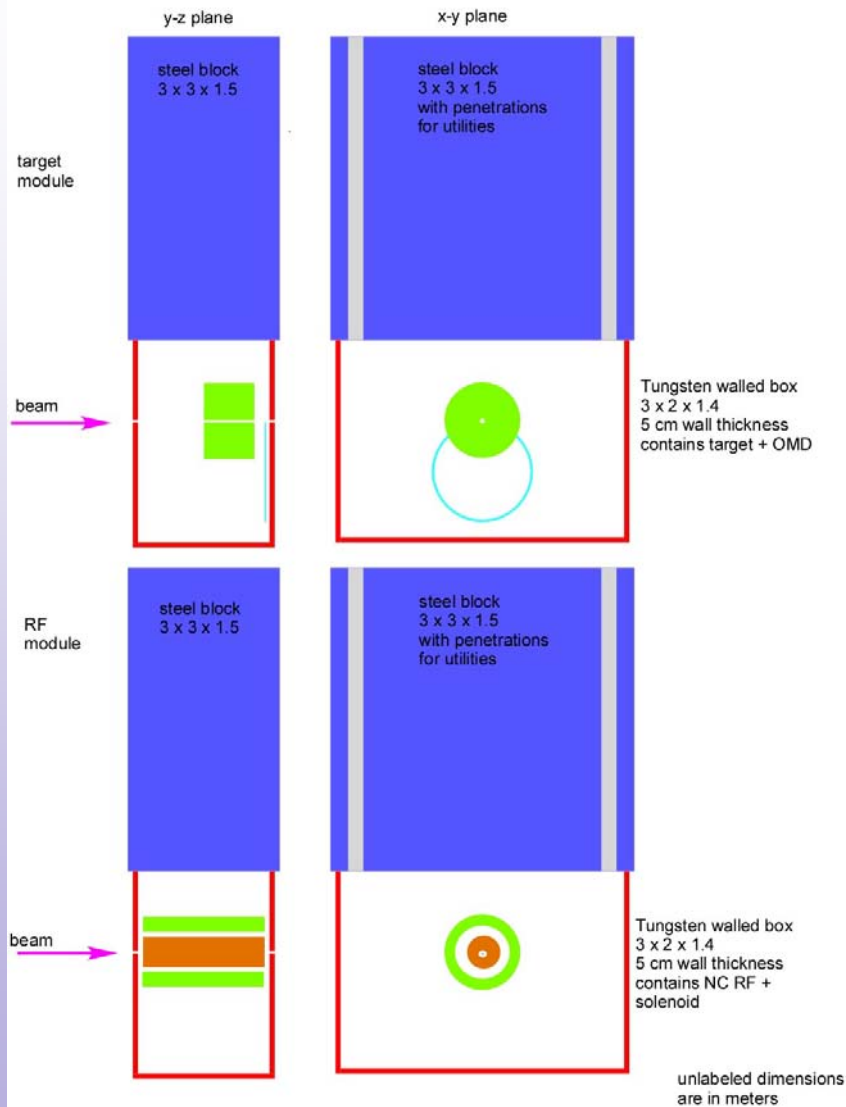


2 x 1.27 m SW Section
3 x 4.3 m TW Section
5 x 10 MW Klystron
2 x 1.27 m 0.5T Solenoid
3 x 4.3 m 0.5 T Solenoid
(from J. Wang)

POSITRON SOURCE BEAMLINES



POSITRON SOURCE MODULES



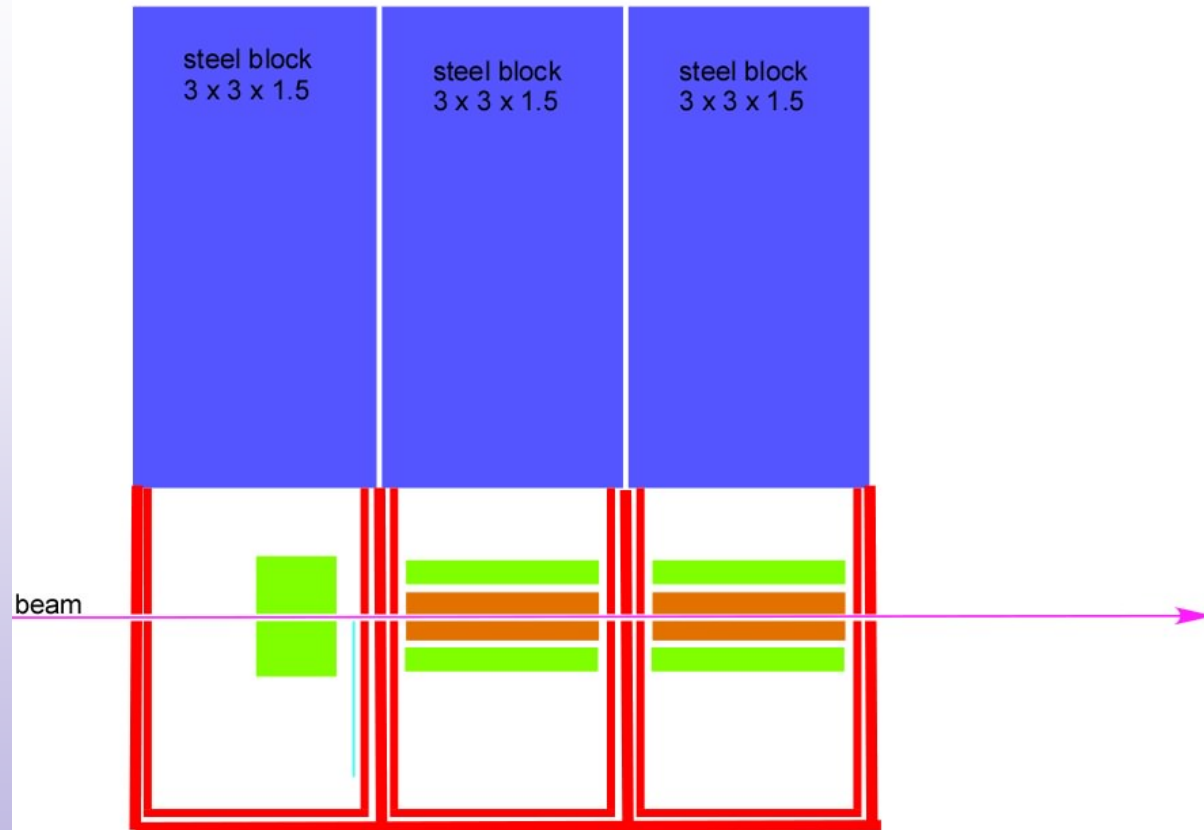
POSITRON TARGET VAULT

y-z plane

Assume that the high activation area is the target and two capture RF sections (4.5 meter total)

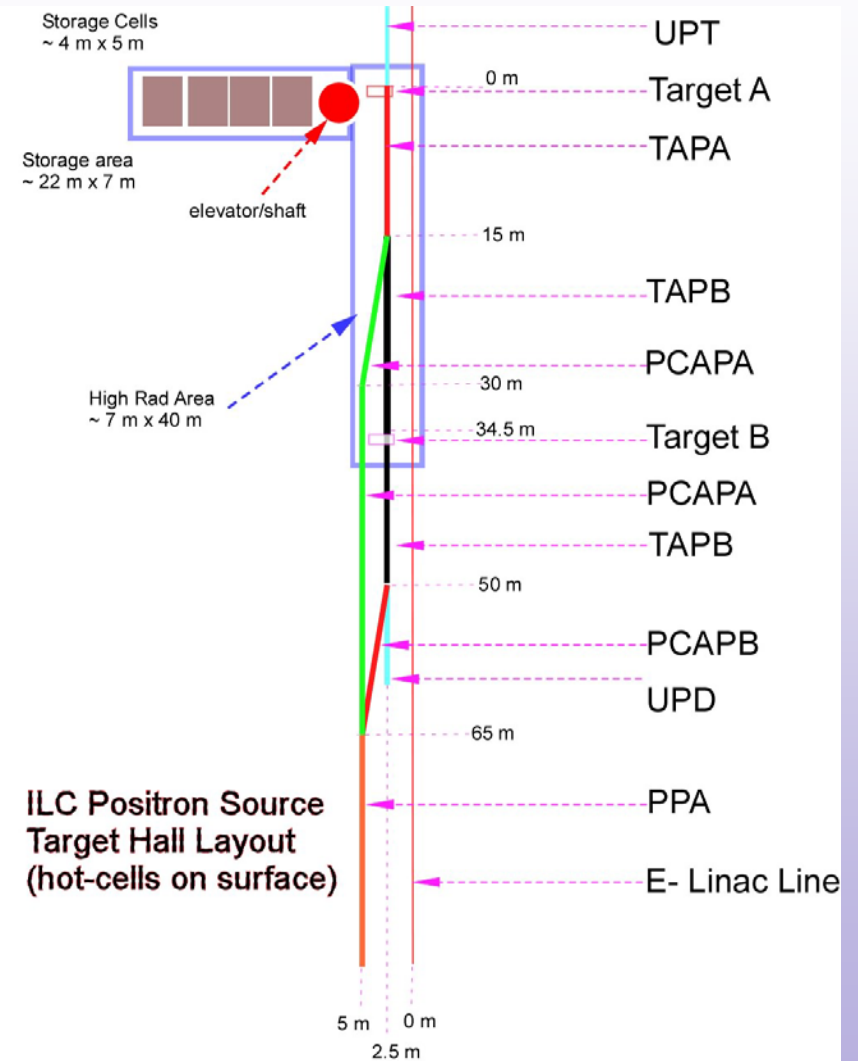
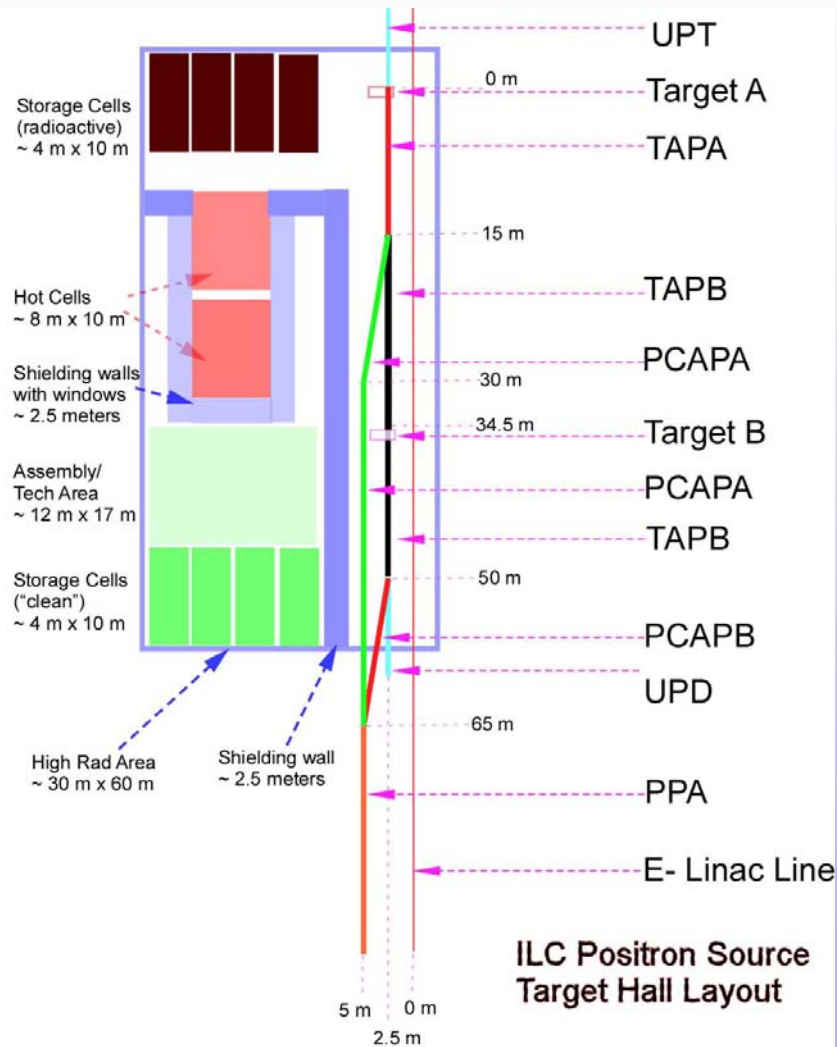
If more is needed then more RF plugs can be added

Double box system may not be necessary

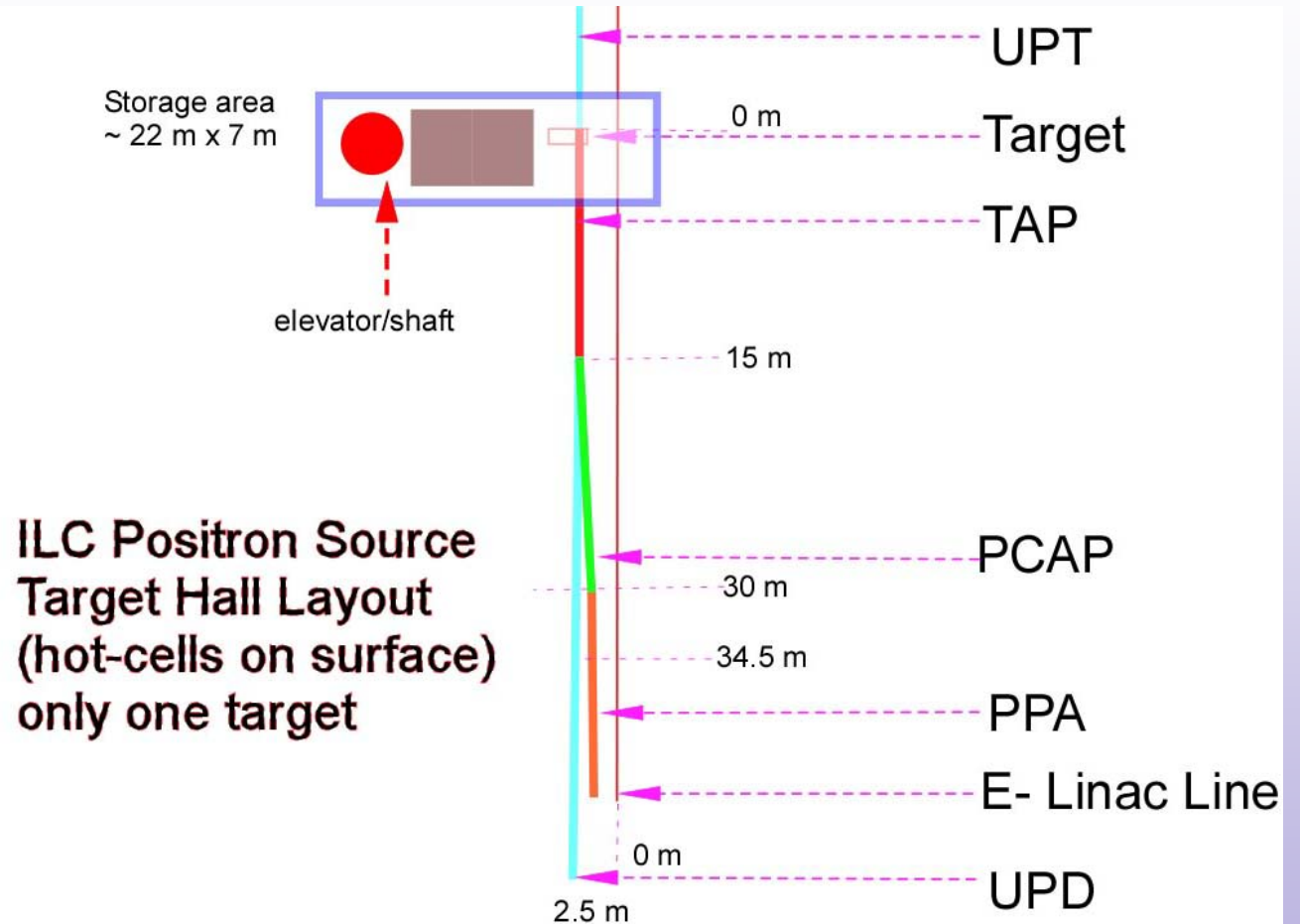


TARGET VAULT
with target module and two rf modules

Underground Target Hall Facilities – Full or “Mini”



“Micro” Target Hall



TRIUMF – ISAC FACILITY

Paper presented at PAC'99, XVIII Particle Accelerator Conference
New York, March 29 -- April 2

TRI-PP-99-11
April 1999

A 500 MeV-100 μ A PROTON TARGET FOR THE ISAC RADIOACTIVE ION BEAM FACILITY

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