

# Commissioning Progress at Diamond Light Source

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# November 2004



Now:



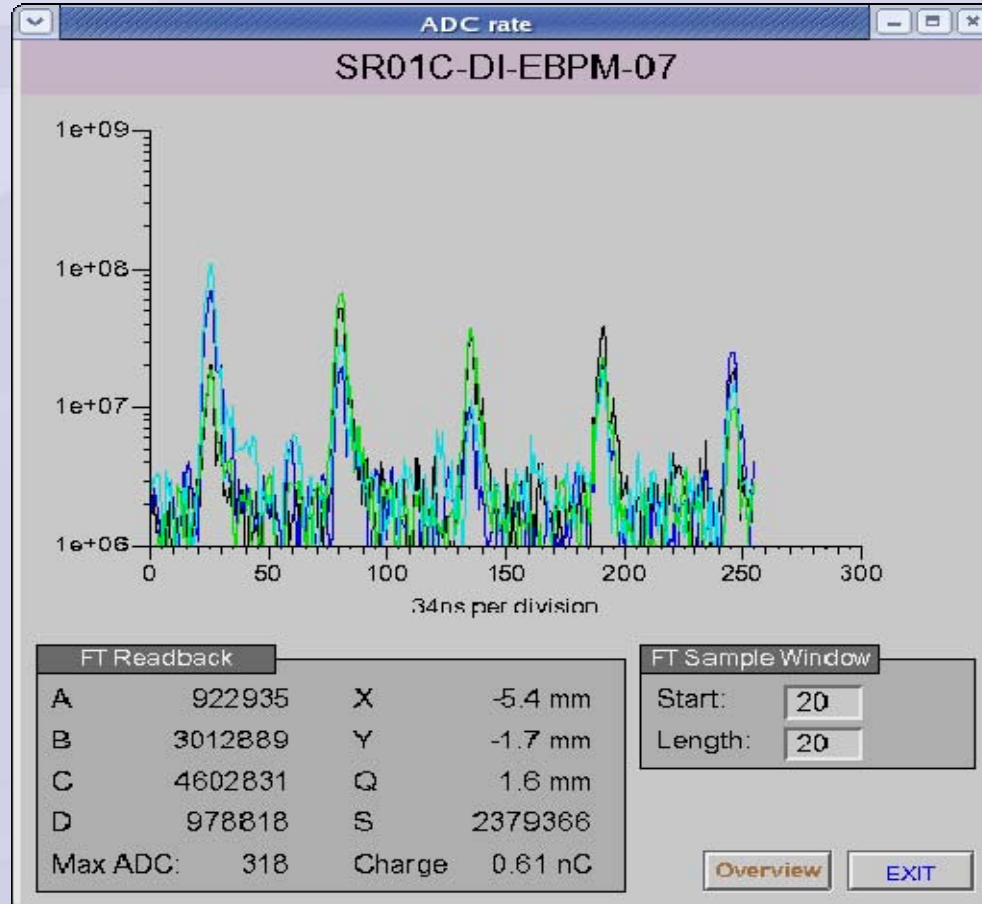
# Inside



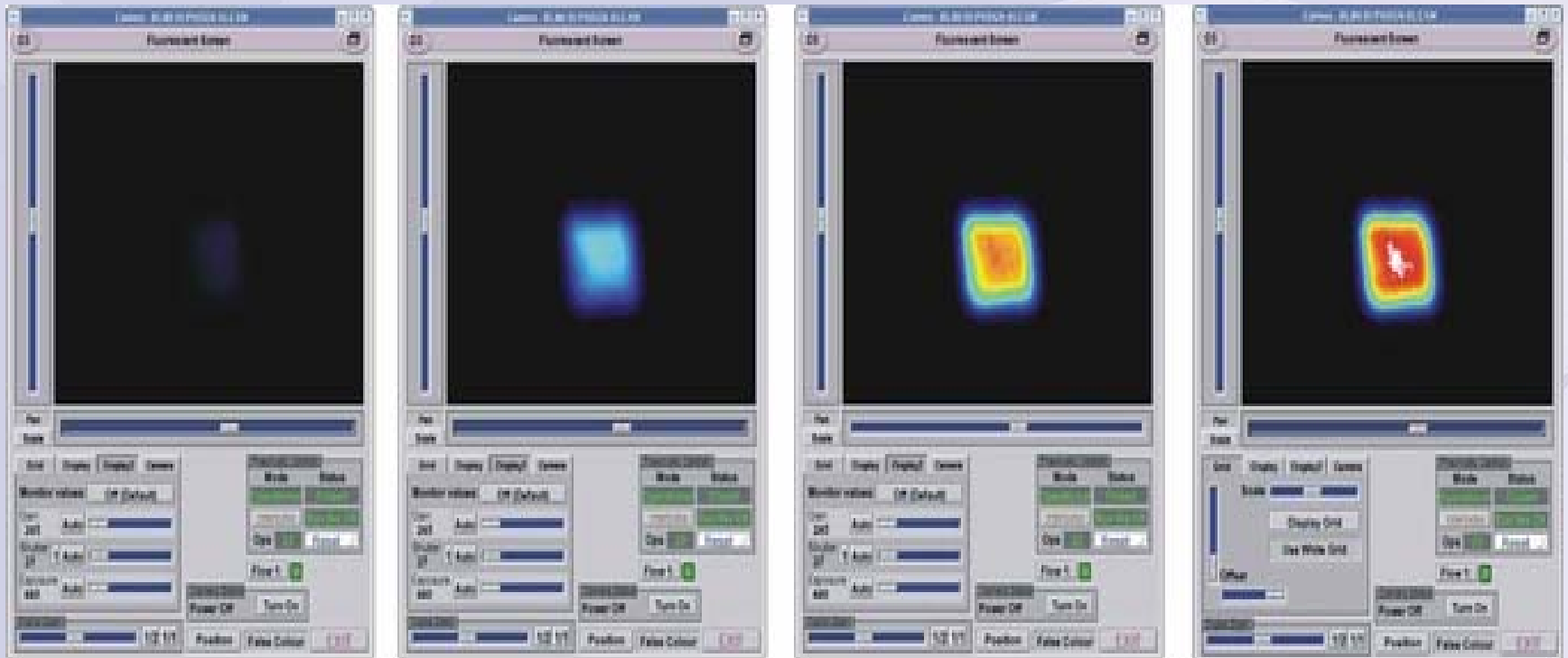
# Linac



# Storage Ring



# Beam Line

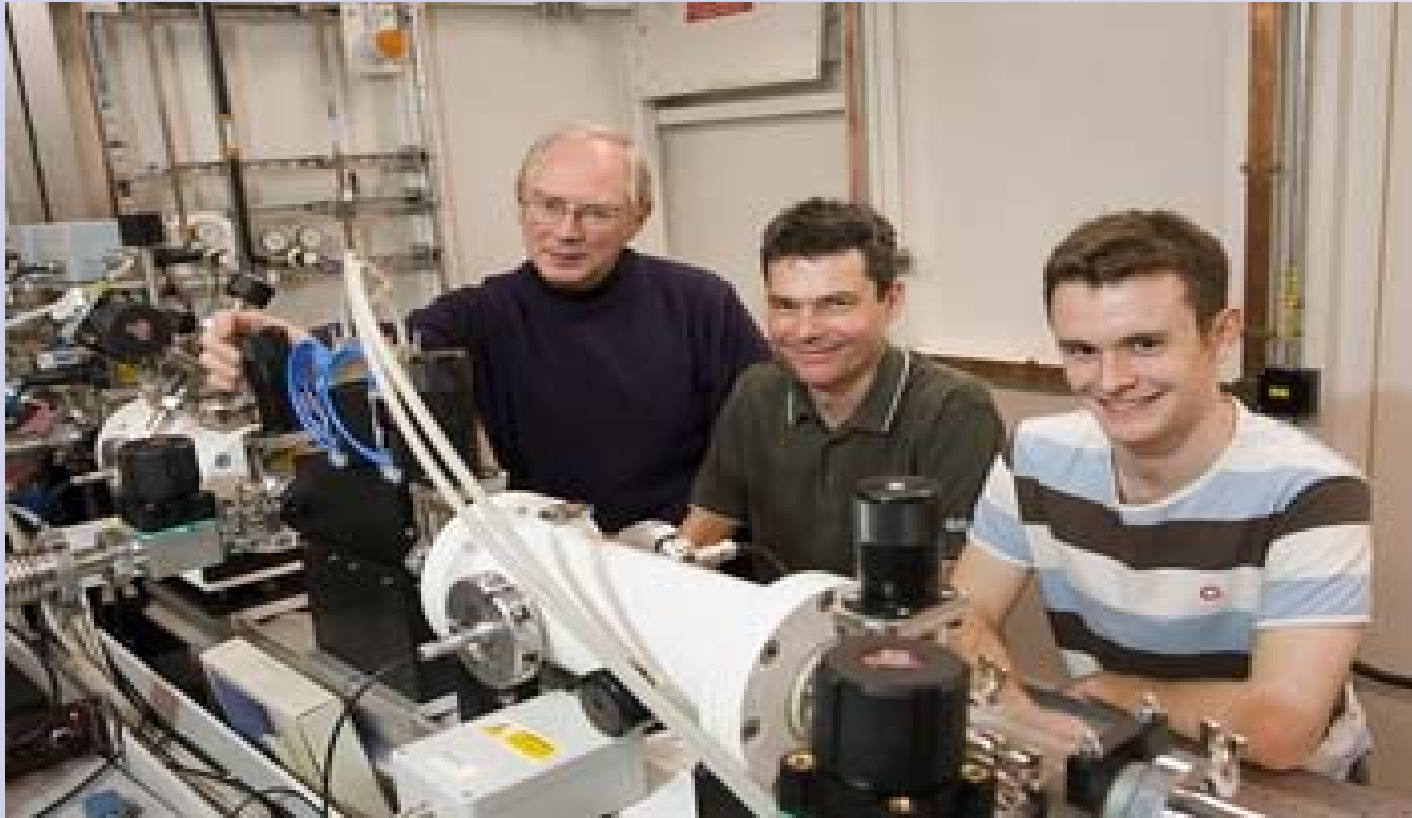


# First Beam





# Users



# Present Status

- Storage ring delivering 125 mA User beam (150mA or more for Acc Physics)
- Beam in 8 beam lines.
- Second RF cavity commissioning – higher current is imminent.
- Top Up...

# Radiation Monitoring



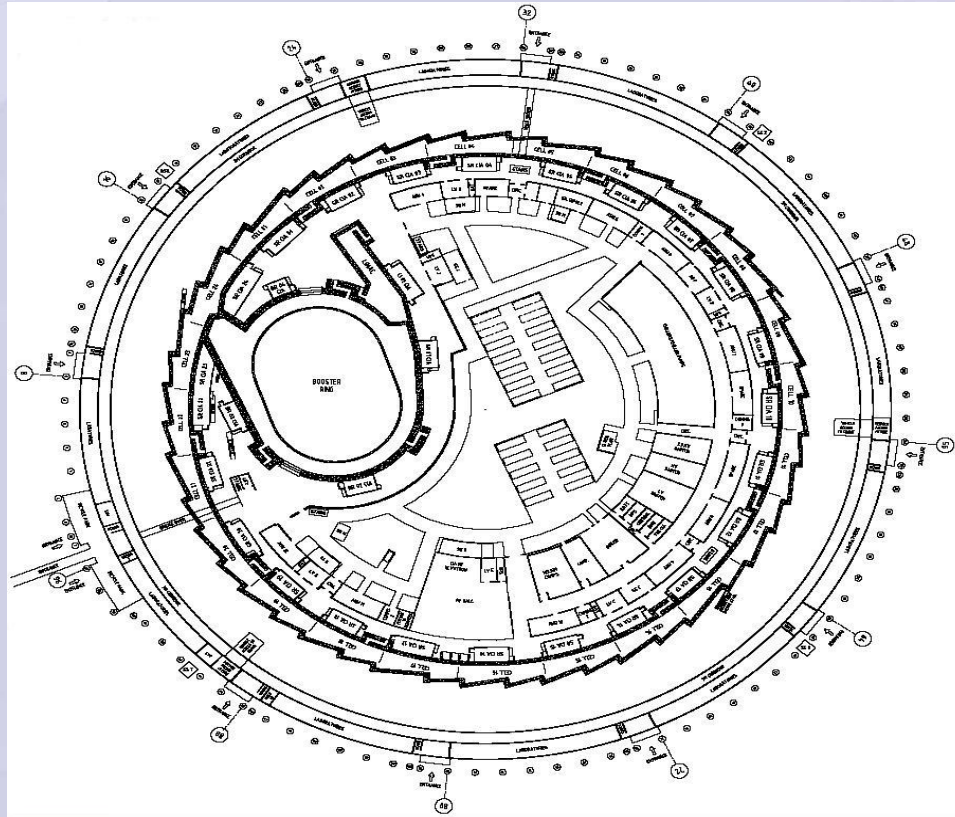
# More Radiation Monitoring



# Passive Monitoring



# Lots of Passive Monitoring



# What We Expected

- Bremsstrahlung – should see a lot at high current.
- 30mm lateral walls in optics hutches.
- Designed for 300 mA.
- Now at 125 mA would only expect  $0.02\mu\text{Sv}\cdot\text{h}^{-1}$  - too low to detect.
- And no leaks for bremsstrahlung so far.



# Synchrotron Radiation

- Shielding is based on final ID gaps of 4mm (Except SC-MP Wiggler), and 500 mA current.
- Now at 7mm gaps on ID's, and 125 mA.
- Synchrotron radiation is not yet challenging bulk shielding.
- But some leaks...



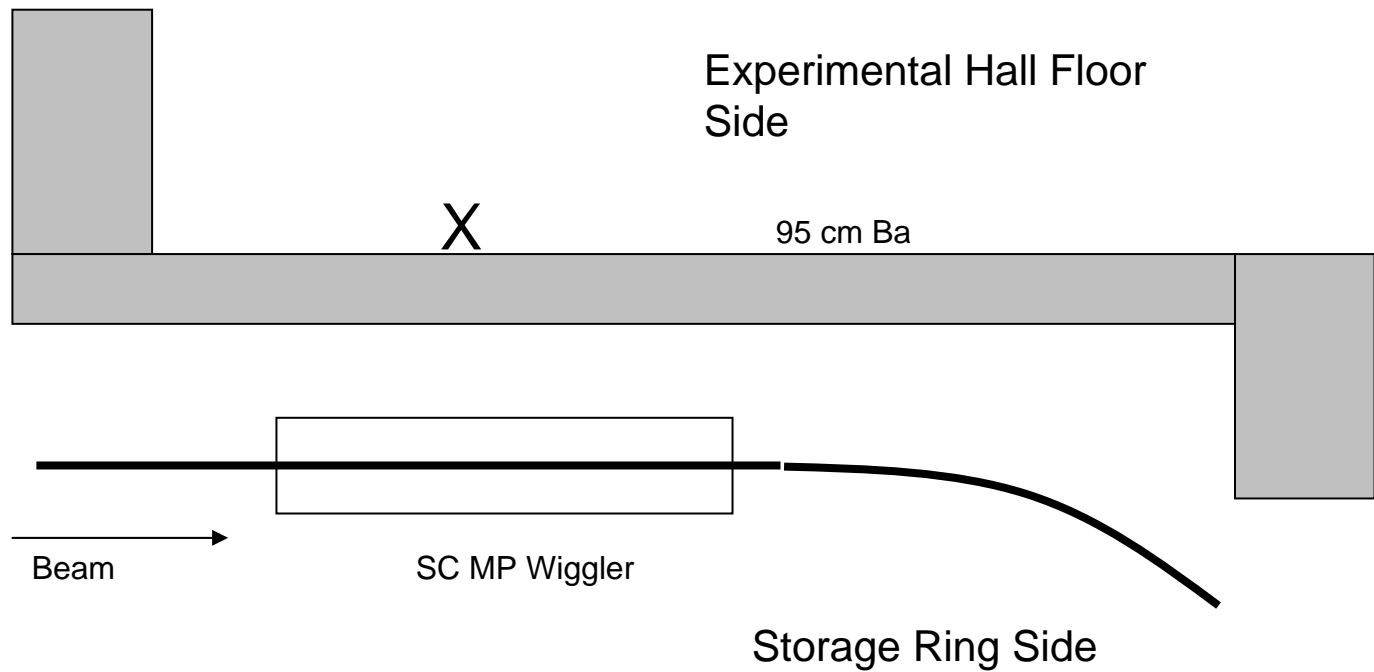
# Shielding Upgrade:



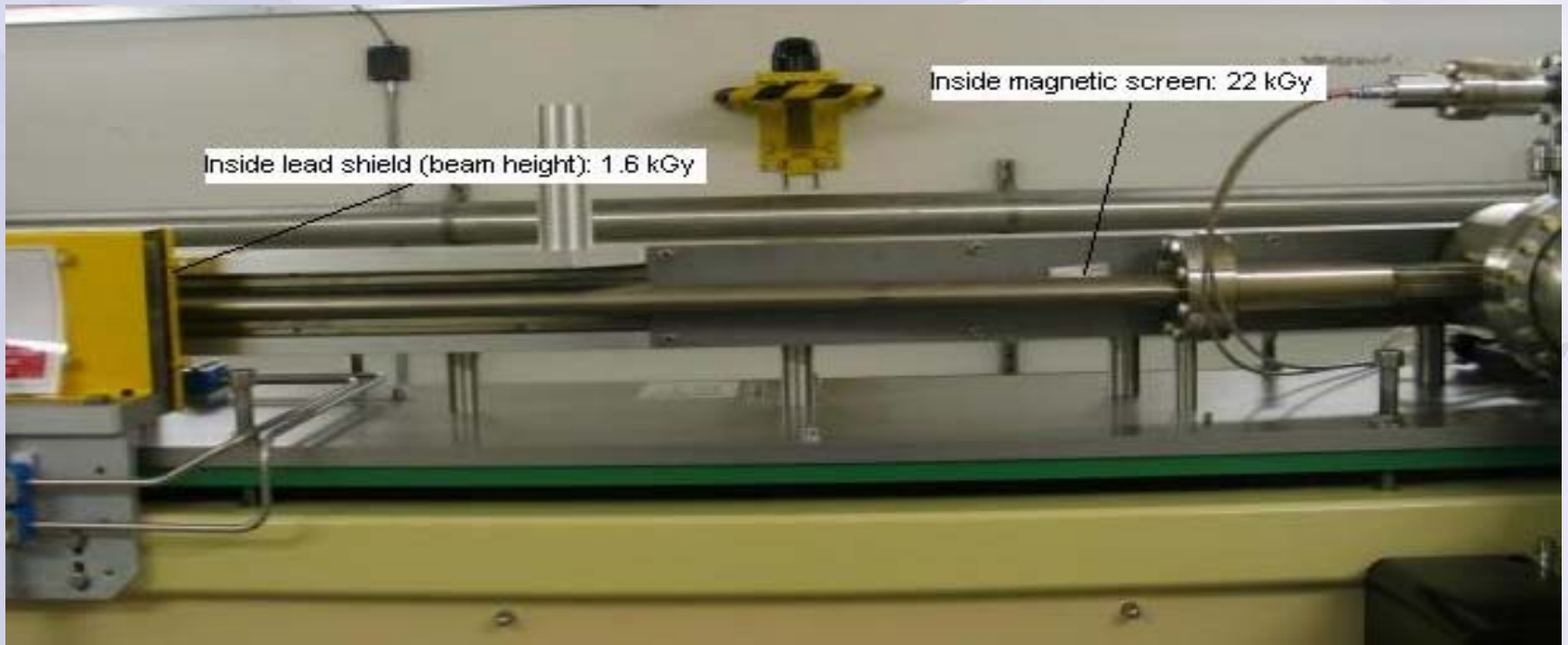
# Wiggler Failure

- SC MP Wiggler failed in March.
- Implosion in beam vessel reduced aperture.
- Beam had to be steered past obstruction
- Radiation measurements made during steering tests.

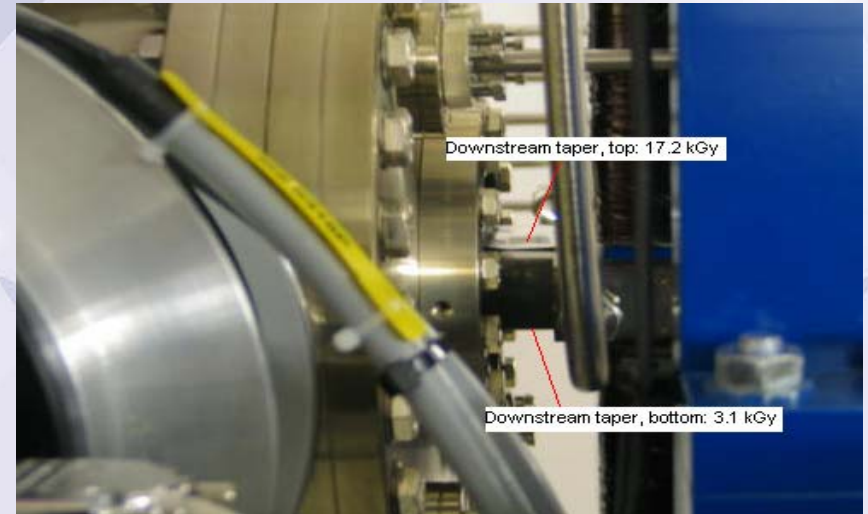
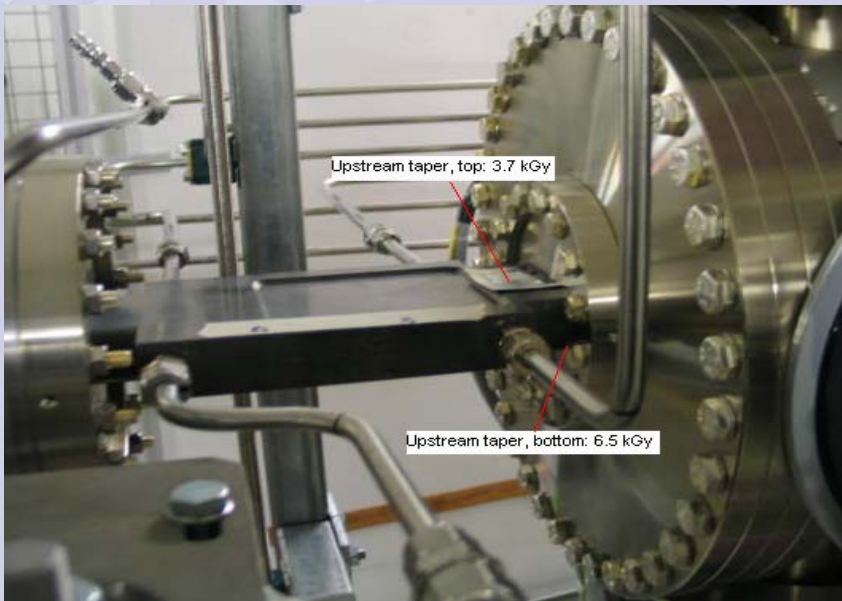
# Geometry



# Doses to Components



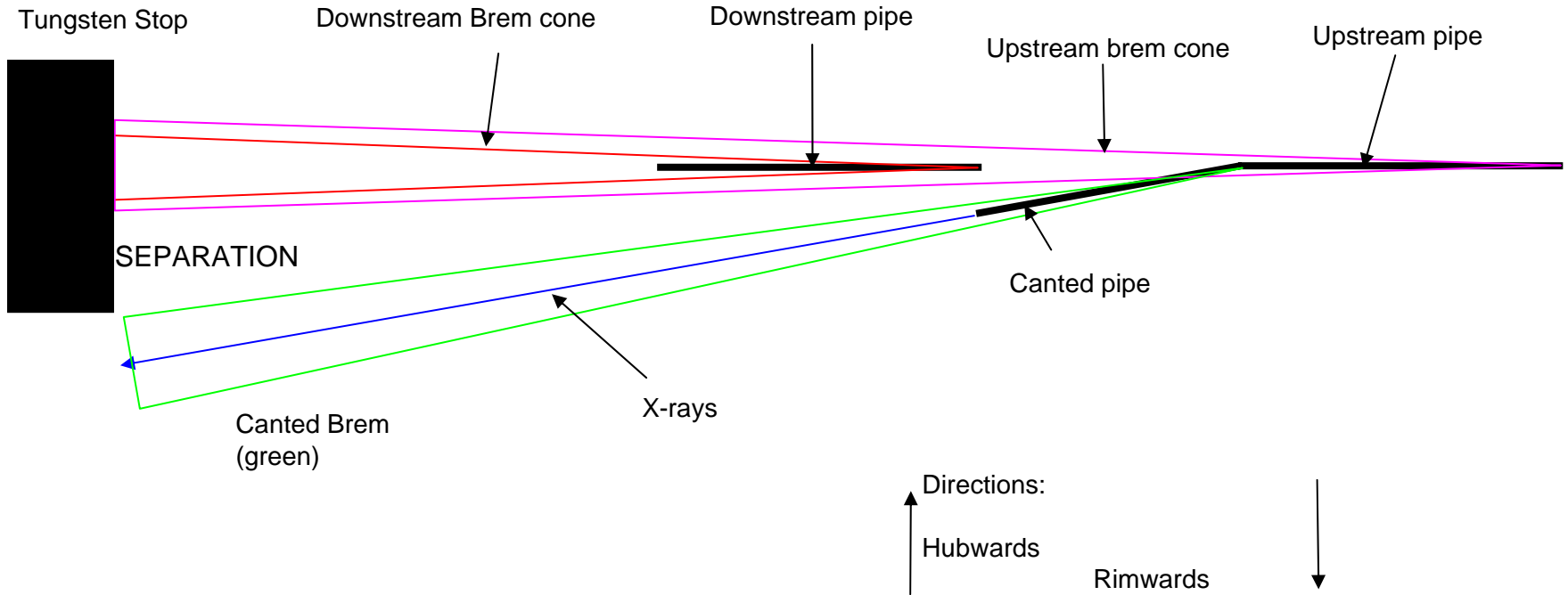
# Doses near ID's



# Where Next?

- Machine not yet operating at design condition – need to get to 300mA, 500mA – bremsstrahlung challenge?
- Plans to reduce bremsstrahlung load and hence reduce hutch shielding thickness – canted undulators.

# Canted Undulators



# The Future - for Discussion?

- Top Up – coming soon.
- RF test bunker – shielded area away from Storage Ring which will allow superconducting cavities to be tested without beam.
- Actinide Samples