Target PASI discussion 1st May 2012

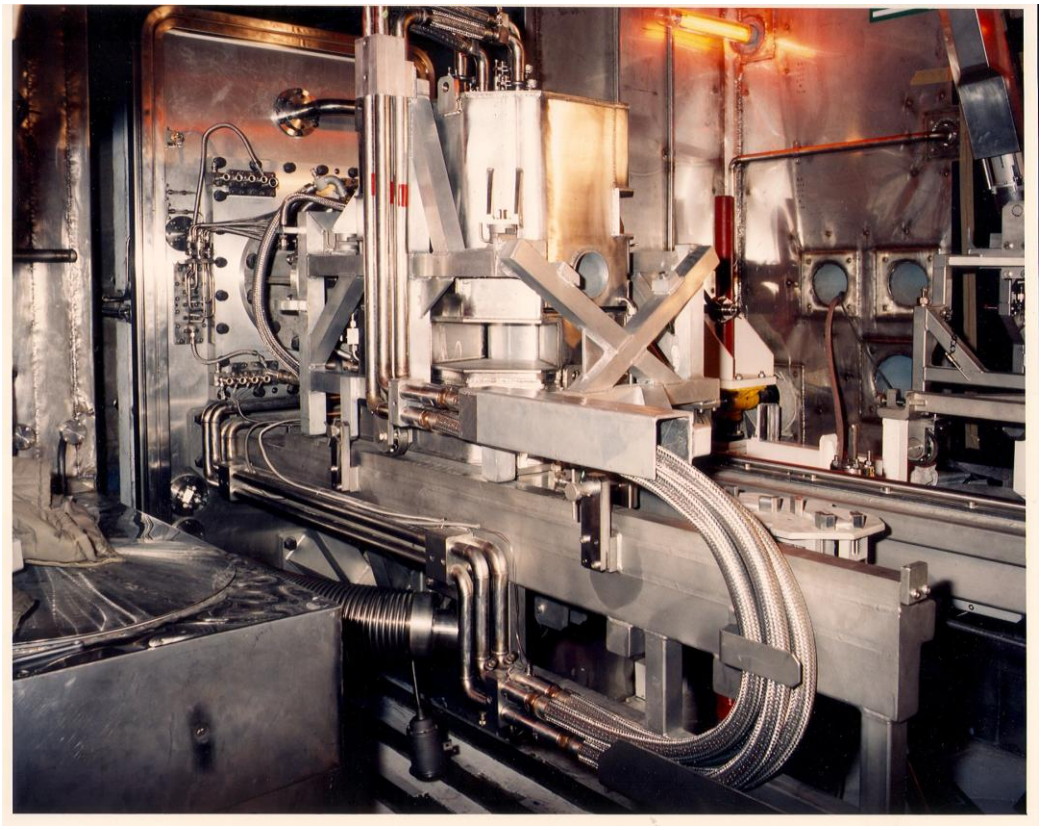
For Work Package 1 ISIS have the following areas of interest:

- 1). Evaluation of maximum allowable operating temperatures and stresses in high Z target materials especially tungsten and tantalum.
    - Initial desk top study of existing information
    - Specific tests on existing test rig run by Roger Bennett perhaps?
    - Critical heat flux for a water cooled target.
- 4). Evaluation of erosion and corrosion rates of target and target cladding materials by the coolant material.
    - Initial desk top study of existing information for tungsten and tantalum cooled by water or helium gas.
    - Design, build and run test rig(s) to study erosion/corrosion of tungsten and tantalum with varying flow rates and quality of coolant at RHPTG perhaps?
    - Repeat tests with representative heat load?
- 5). The development of a new suite of instruments for monitoring the performance of solid high power targets.
    - Desk top study to review emerging technologies for temperature, pressure, strain and flow measurement in extreme environments e.g. nuclear reactors, space flight and novel tests carried out at other high power particle accelerators for instance.

Other areas of Work Package 1 which are now covered by other means:

- 2). The investigation of the maximum allowable power density a solid target based on the ISIS beam power and beam profile. Work ongoing with RHPTG.
- 3). To investigate reliable long term temperature measurement in high radiation environment. ISIS commissioned work ongoing on this area.
- 6). To identify reliable long term strain measurement systems for use in a high radiation environment. ISIS commissioned work ongoing on this area.

ISIS Second Target Station TRAM



ISIS First Target Station TRAM

D.M.Jenkins 27/04/12