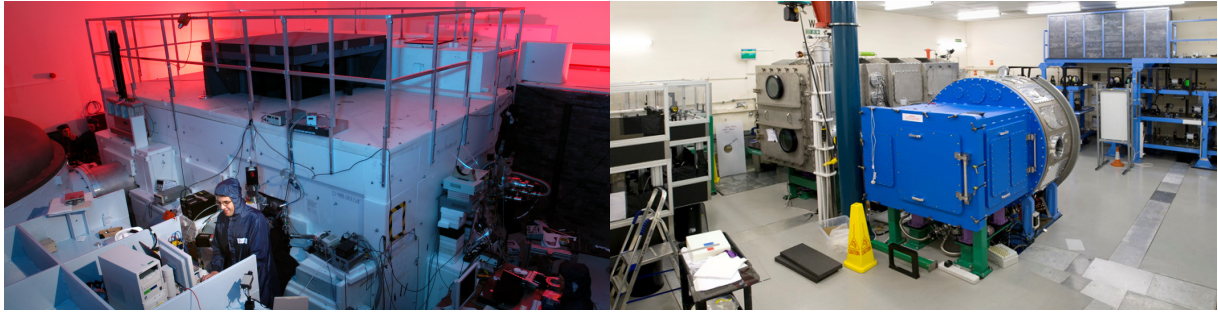


Vulcan Call For Access P1 2020-21



The following information provides guidance for the Vulcan experimental areas for the 2020-21 proposal call. It is recommended that you discuss your laser, experimental and diagnostics requirements with the appropriate CLF personnel prior to submission of your proposal.

Details on the Vulcan Laser can be found on the following link:

<http://www.clf.stfc.ac.uk/Facilities/Vulcan/12248.aspx>

Contact: Ian.Musgrave@stfc.ac.uk

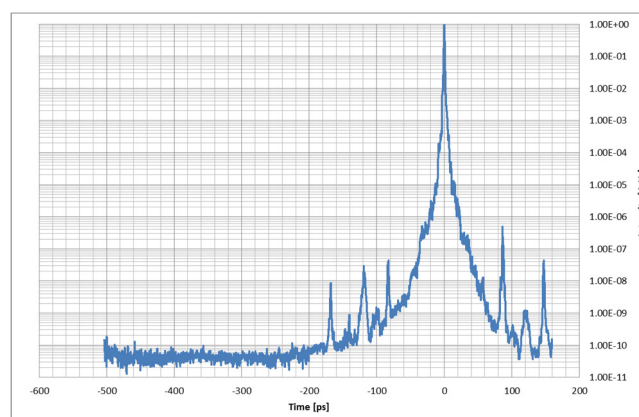
Details of the Vulcan experimental areas can be found at:

<http://www.clf.stfc.ac.uk/Facilities/Vulcan/Vulcan+experimental+areas/12252.aspx>

Contact: Rob.Clarke@stfc.ac.uk

Target Area Petawatt (TAP):

TAP will continue to operate at up to 600J prior to compression, with a compressed pulse duration of ~ 500fs. The beamline efficiency is expected to be around 65%. The contrast as measured in December 2015 is shown below. Standard F3 focusing is available on the CPA beamline. On-shot defocus compensation is applied to the beam, but at present a shot-to-shot variation of approximately $\pm 0.1\lambda$ of defocus is measured. A single long-pulse beamline is available with the same specifications as per TAW (see below).



Science & Technology Facilities Council
Rutherford Appleton Laboratory

Science & Technology Facilities Council
Rutherford Appleton Laboratory, Harwell Science and
Innovation Campus, Didcot, OX11 0QX United Kingdom

Tel +44 (0)1235 445000 Fax +44 (0)1235 445808
www.scitech.ac.uk

Target Area West (TAW):

TAW can provide 2 main CPA beamlines - B7 and B8. B7 operates with an energy limit of ~100J prior to compression and a compressed pulse duration of ~1ps (N.B. The shortest pulse duration on recent experiments has been between 1.2 and 2ps). The compressed pulse can be increased in duration within reasonable parameters. B8 has 2 operating modes. Mode 1 has the same specifications as B7. Mode 2 operates at 300J prior to compression for pulse durations of 15ps or longer. Both CPA beamlines have a measured efficiency (July 2011) of 75-80% of the delivered laser energy when using standard experimental configurations. Standard F3 and ~F15 focusing are available.

B7 and B8 can be used in long pulse mode in conjunction with the long pulse inner track using a new compressor bypass. The exact specifications available are dependent upon pulse parameters and the required specifications should be discussed with facility staff.

The standard long pulse specifications (main 6) for both TAP and TAW are unchanged. The maximum long pulse energies depend on the pulse duration. Indicatively each beam could fire 80J in 200ps, 175J in 500ps, 250J in 1ns or 280J in 6ns. The shape of the pulse could be shaped with a temporal resolution down to 100ps. The shot-to-shot jitter between the long and short pulse is currently $\sim\pm 170$ ps. Special configuration and/or pulse shape may reduce the available energy. It is recommended that shaped long-pulse requirements be discussed with facility personnel prior to submitting a proposal.

