



NJOC-VN-186

Position title: Neutron diagnostic experts

Background

The Neutrons and Gammas group is responsible for more than a dozen diagnostics. For neutrons there are yield, activation, emission profile and spectrometric measurements. Confined ions are observed by gamma spectrometry and gamma profile measurements, while escaping ions are measured by charged particle diagnostics and by neutral particle analysers.

During the DT experiments on JET (currently planned for 2017) these diagnostics will be crucial to the science programme. Extensive preparations and upgrades are already underway to ensure that the diagnostics are fully ready and calibrated so that they can be exploited during the DT phase, and we now need to strengthen the neutron diagnostics team to complete this work.

Main responsibilities

The intention is to recruit one or more people to the New JET Operating Contract Team (NJOC) to cover the responsibilities listed below. (The number of recruits and the division of responsibilities will depend on the range of capabilities of the applicants.)

1. Operational responsibility for the vertical and horizontal neutron cameras
2. Operational responsibility for the compact neutron spectrometers (NE213, CVD)
3. Providing cover for operation of other neutron flux detectors and spectrometers on JET
4. Support and development of data analysis codes
5. Validation of data quality and maintenance of calibration records, including consistency cross-calibration with other neutron systems
6. Representing the Operator in collaborative neutron diagnostic projects with other Research Units, including involvement in the design of enhancements to existing systems and in developments of new techniques and instruments

Special Features

Although the primary role will be linked to specific diagnostic systems, the Neutrons and Gammas group functions as a team and the secondee may be asked to assist with operation and/or maintenance of other systems for which the group is responsible.

JET experiments run from 06:30 until 22:00, and some control-room shift working will therefore be required to support operations.

Desirable qualifications, aptitudes and experience

1. A broad practical (“hands-on”) knowledge of technologies and techniques relevant to neutron diagnostics [detectors, electronics, data acquisition systems and data analysis], with experience of plasma diagnostic measurements, preferably involving measurement of neutron flux or energy.
2. A good physical sciences or engineering degree with postgraduate and preferably post-doctoral research experience. Knowledge of nuclear and plasma physics would be a significant advantage.
3. Fluency in FORTRAN, C++ or IDL and familiarity with Linux/UNIX systems would be an advantage.
4. Familiarity with neutronics calculations, such as with MCNP, would be an advantage.
5. Ability to work within a team and in a regulated safety and QA environment is essential. Familiarity with safe transport and use of radioactive calibration sources would be an advantage.
6. Knowledge of general tokamak physics will be an advantage.

Notes

1. Participation in the scientific programme is encouraged, through the sending Research Unit.
2. Publications are encouraged, both through the sending Research Unit, and, for some instrumental aspects, through the Operator.
3. There will be no direct staff or financial responsibility.
4. Work on hardware systems must comply with the CCFE safety and quality systems.

General Contact: Neil Conway (Neil.Conway@ccfe.ac.uk), Diagnostics and Technical Support Unit Head

Technical contact: Sergey Popovichev (Sergey.Popovichev@ccfe.ac.uk)

Applications through the Head of the Research Unit to the NJOC Senior Manager, Tim Jones, by 13th February 2015. Later applications may be considered if the post remains unfilled.

Note that candidates who are not EU nationals will need to obtain a visa to work in the UK. The JET Operator can provide advice on the issues involved and candidates are recommended to investigate before interview