

<b>TITLE:</b> Neutral Beam Integration and Control Engineer		CHD-050
<b>REPORTS TO LINE MANAGER:</b> Head of Heating and Current Drive Division Department for CODAC&IT, H&CD and Diagnostics		
<b>DIRECT EMPLOYMENT:</b> NOT REQUIRED		<b>GRADE RANGE:</b> P3 – P4
<b>Date Written:</b> June 2008	<b>Date Revised:</b>	<b>Date Revised:</b>

**Purpose:**

The ITER Neutral Beam (NB) system consists of two 1 MeV heating neutral beams, upgradeable to three, and a 100 keV diagnostic neutral beam. All the injectors are based on the neutralization of accelerated negative ions,  $H^-$  or  $D^-$ . The heating beams are designed to inject either  $H^0$  or  $D^0$  beams with a power of 33 MW into the ITER plasma. The integration and control engineer is required in order to define the complete control and interlock system, and the instrumentation of the neutral beam systems, and to manage the interfaces associated with the NB sub-systems. In addition, the individual will be responsible for writing the technical aspects of the control, interlock and data acquisition systems of the procurement arrangements (PA) associated with the NB system. The individual will be responsible for interacting with each domestic agency to ensure compliance and he/she will be responsible for managing the interfaces with the auxiliary systems.

**Major Duties/Responsibilities:**

- Is responsible for establishing the overall control, safety and interlock philosophy for the ITER heating and diagnostic NB systems. A supervisory system is needed to interface with the electrical system, cryopump operation and regeneration, cooling system, gas introduction system and the mechanical parts of the NB system;
- Is responsible for establishing the overall instrumentation and data acquisition philosophy for the ITER heating and diagnostic NB systems;
- Helps the responsible officer (RO) for neutral beams in monitoring R&D activities, such as will be undertaken at the neutral beam test facility;
- Is responsible for the preparation of the relevant interface documentation, especially with CODAC, and keeping it up to date;
- Is responsible for the definition of the user interfaces that will be required for the factory acceptance tests, commissioning and operation of the NB control, interlock and instrumentation systems;
- Interfaces with other ITER groups interacting with the NB systems and defines the relevant information for the operators of the NB plant;
- Assists the RO in the preparation of relevant procurement packages and associated documentation;
- Is responsible for the management of the technical aspects of relevant sub-systems and supporting hardware through the NB related procurement packages;
- Reports variances on all technical, cost and schedule aspects immediately to the division head and supports effective risk identification and management;

- Assists in the preparations for the installation of the NB systems on ITER;
- Participates in commissioning of the NB heating and diagnostic systems;
- Maintains a strong commitment to the implementation and perpetuation of the ITER safety program, values and ethics.

#### **Qualifications and Experience:**

- **Education:** University Degree in Control or Electrical Engineering.
- **Experience:**
  - At least 10 years' experience working with the design, installation and operation of high power neutral beam systems;
  - A clear understanding of the problems related to negative ion generation and acceleration.
- **Language requirements:** Good working knowledge of spoken and written English is essential.

#### **Work Directions and Interfaces:**

Reports to the Head of the Heating and Current Drive Division.

#### **Authority/Approval Levels:**

Has authority and approval levels defined by the Division Head for his/her scope of work.

#### **Measures of Effectiveness:**

- Successfully develops the methodology for technical control of the ITER NB systems;
- Successfully contributes to the NB specification of allocated procurement packages;
- Successfully manages procurement of systems / components through procurement packages;
- Successfully controls the technical aspects of the NB system installation on ITER;
- Successfully supports the NB needs of the project.