



**International Atomic Energy Agency**

**Guidance for the Recruitment,  
Training and Qualification and  
Authorisation of Personnel for  
Research Reactors**

**A Willers**

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# The Overriding Issue

- **The safe operation of research reactors requires an appropriate organisational structure, which is clearly defined and staffed with competent managers and qualified personnel having a proper awareness of the technical and administrative requirements for safety and a positive attitude to safety culture.**

# Relevant Documents

- **DS325, ‘The Operating Organisation and the Recruitment, Training and Qualification of Personnel for Research Reactors’.** July 2006.
- **NS-G-2.8, ‘Recruitment, Qualification and Training of Personnel for Nuclear Power Plants’,** 2002.

# Aspects to be Discussed

- **Recruitment.**
- **Training and Qualification**
- **Authorisation**

# Graded Approach

- **An acceptable organisational structure and staffing for a low power research reactor will be quite different from that for a reactor with an intermediate or high power level.**
- **On the basis of the complexity of the design, the hazard potential and the planned utilisation of the reactor, grading may be of assistance in determining the educational level for various reactor positions, the contents and duration of initial and continuing training and the subsequent assessment.**

# Position Descriptions

- **Position descriptions should clearly define the authorities and competencies for each position within the organisation.**
- **The position descriptions for key positions may include deputising arrangements for periods when the incumbent is unavailable.**
- **The description of the responsibilities and competencies needed for each position should form the basis for defining the required qualifications and prerequisites for recruiting, training and continuing training of the individuals.**

# Need for Authorisation

- **The operating organisation should provide adequate training and re-training for those staff positions that require Authorisation in accordance with legal requirements and the requirements of the regulatory body.**
- **Operating personnel that should hold Authorisation include the reactor operator and the shift supervisor as these persons are expected to operate the reactor.**

# Recruitment I

- **The operating organisation shall establish an appropriate reactor management structure and provide for all necessary infrastructure for the conduct of reactor operations. This shall include the specification of the minimum staffing requirements for the various disciplines required to ensure safe operation for all operational states of the research reactor.**
- **The operating organisation should therefore ensure that its operating personnel are appropriately qualified and that they have, at the time of commencing duties, a combination of education, training and experience commensurate with their level of responsibility.**

# Recruitment II

- **The presence of properly qualified personnel provides reasonable assurance that decisions made and actions taken during all operational states will be such that the reactor is operated in a safe manner.**

# Recruitment III

- **The minimum education and experience requirements required for each position in the operating organisation should be defined.**
- **A background check of persons may be required.**
- **As a minimum, a medical examination of the person should be undertaken at the time of recruitment and periodically thereafter.**

## Recruitment IV

- **The recruitment policy for research reactor operating personnel should consider continuity of organisational experience as new staff members replace experienced personnel.**
- **It should also consider the unanticipated loss of key personnel.**

# Reactor Operator

- **The reactor operator position should require at least a high school diploma or vocational education in a technical field. Previous job related experience should also be considered.**

# Shift Supervisor

- **The position would be expected to be filled from the reactor operators at the facility.**
- **A shift supervisor should have several years of experience as an authorised reactor operator.**
- **Management skills are necessary for the position.**

# Training and Qualification

- **The operating organisation is responsible for ensuring that reactor staff and contractors are appropriately trained and re-trained.**
- **The operating organisation should document the competency requirements for each position.**
- **The competency requirements and the associated training programme should be periodically reviewed to ensure continued adequacy and effectiveness.**

# **Training Programme: Reactor Operator I**

- **Refresher course**
- **Background course**
- **Reactor theory and related subjects**
- **Reactor technology**
- **Facility specific systems**
- **Reactor operation and safety**
- **Administrative requirements**
- **Rules and regulations**

# **Training Programme: Reactor Operator II**

- **In addition to the theoretical training, practical on-the-job training should be provided.**
- **This would include taking the reactor to power and carrying out manoeuvring transients under the strict supervision of an authorised reactor operator.**

# Training Programme: Shift Supervisor

- **Operating organisation's administrative requirements**
- **OLCs**
- **Core and system changes**
- **Emergency plan**
- **Emergency procedures**
- **Decontamination procedures**
- **Management training**

# Qualification

- **Following training, operating personnel should be assessed prior to receiving authorisation to perform their duties.**
- **The assessment can include;**
  - **Oral examination,**
  - **Written examination,**
  - **Practical examination, and**
  - **Performance under stress.**

# Continuing Training

- **Continuing training is essential to ensure that the knowledge, skills and attitudes of the operating personnel are maintained.**
- **Continuing training should also be used for career development purposes.**
- **Operating personnel who have been absent from active duties for a considerable time (e.g. several months) should be required to complete an appropriate re-training programme, including examination.**

# Authorisation

- **Authorisation is the granting by a regulatory body or other governmental organisation of written permission for a reactor operator to perform specified activities.**
- **Not all positions within an operating organisation require authorisation. As a minimum, it might be expected that the reactor operator and shift supervisor require authorisation.**