

# Reactors and Nuclear Safety Unit

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The Research Unit on Reactors and Nuclear Safety includes the **Portuguese Research Reactor** (RPI), a unique infrastructure in the Iberian Peninsula, as well as the **Neutron Activation in Environment, Nutrition and Epidemiology** and **Applied Dynamics** groups. The RPI also supports activities for groups in the Research Unit of Chemical and Radiopharmaceutical Sciences and in the Research Unit of Radiological Protection and Safety. The year 2008 was remarkable in human resources terms, as four new auxiliary researchers were hired under the *Ciência 2007* program and two more were selected to start in 2009.

The staff involved in all aspects of the operation and use of the RPI presents its activities under the common headline of **Operation and Exploitation of the Reactor**. The activities for this group were dominated by the return to the USA of the highly enriched fuel previously used by the reactor, thus closing a cycle started in 1974. A new researcher brought support in dosimetry to enhance the capacity to respond to new users and new demands.

The **Neutron Activation in Environment, Nutrition and Epidemiology** group uses the  $k_0$  INAA technique in the RPI and was again the main Portuguese user of the reactor in 2008, accounting for 20% of the total irradiation time. The group is dedicated to cycling and impact of trace elements in the atmosphere. It addresses, specifically, the development and application of nuclear techniques, source

apportionment and tracking in the atmosphere, chemical speciation, uptake and release of chemical elements in biomonitoring and monitoring, as well as health linkage through epidemiology and nutrition studies. These objectives are approached through research, included mostly in PhD theses. The activities are essentially financed by the Foundation for Science and Technology (FCT). The group had a much needed influx of young researchers in 2008, with two Auxiliary Researchers hired under the *Ciência 2007* program and one post-doc with a FCT grant.

The research performed by the **Applied Dynamics** group is mostly concerned by vibration and acoustic problems displayed by components of nuclear and conventional power plants. As such, a significant part of their research results has been motivated and funded by the French *Commissariat à l'Energie Atomique (CEA)* and the Portuguese *Electricidade de Portugal (EDP)*. However, the techniques developed by this group can and have been used to solve problems, both of industrial and fundamental nature, outside the realm of power generation. This group also had a new researcher this year. In spite of continuing to be one of the smallest groups in terms of ITN staff, this fact is compensated by an active collaboration with Universities and Research Laboratories, both in Portugal and abroad. The vitality of this group is well demonstrated by their research contracts and publications

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## Reactors and Nuclear Safety Unit Staff

### Researchers

J. G. MARQUES, Princ.  
M. C. FREITAS, Princ.  
A. V. ANTUNES, Princ.  
A. FALCÃO, Princ.  
A. KLING, Aux. (90%)  
N. P. BARRADAS, Princ. (90%)  
A. R. RAMOS, Aux. (90%)

### Technical Personnel

J.P. SANTOS, Dosimetry

J. A. M. RIBEIRO, Reactor Operator  
J. C. ROXO, Reactor Operator  
N. SERROTE, Reactor Operator  
R. SANTOS, Reactor Operator  
R. POMBO, Radioprotection  
F. B. GOMES, Radioprotection  
A. RODRIGUES, Technician  
I. DIONÍSIO, Laboratory Assistant

### Administrative Personnel

T. FERNANDES, Secretariat