

NUCLEAR SCIENTISTS AROUND THE WORLD



Palmiro VILLALIBRE ARES



Mining engineer from ETSIM (Polytechnic University of Madrid), started his career at the Spanish Nuclear Safety Council (CSN), working in thermo-hydraulics first and then in severe accident; as part of the second he joined the experimental Programme PHEBUS CSD in the Nuclear Research Centre of Cadarache, France. Later, he worked more than ten years at Enusa Industrias Avanzadas, dealing with supply's projects to European countries apart from Spain and mainly framed under the European Fuel Group consortium. In 2005 he joined the International Atomic Energy Agency (IAEA) to work at INPRO as a Cost-Free Expert provided by Spain (Enusa). In January 2014 he joined the IAEA's Safety Assessment Section as Nuclear Safety Officer.

Nuclear Safety Officer. IAEA's Safety Assessment

For how long have you had the current duties at the IAEA?

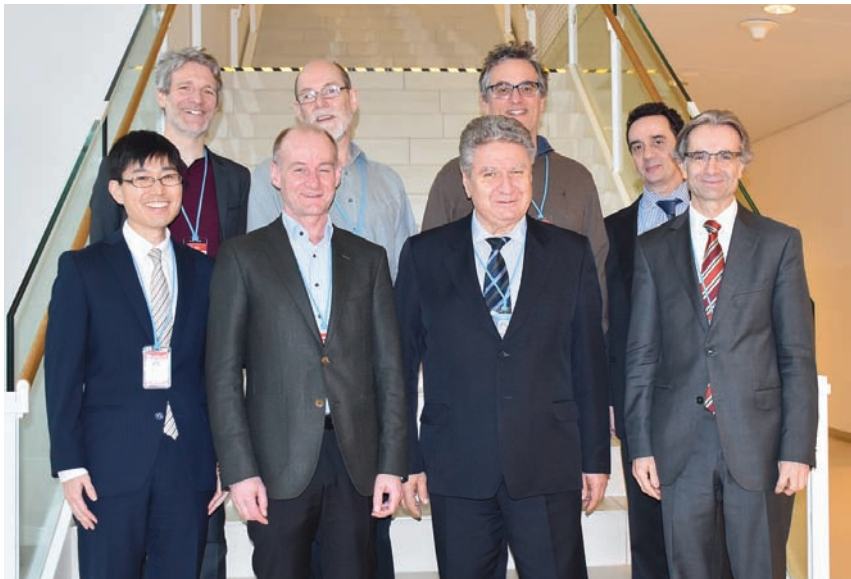
I have had two different assignments at the International Atomic Energy Agency (IAEA). In March 2005, I joined the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), implemented under the Department of Nuclear Energy mainly with extra budgetary funds and primarily determined by the financial contributors. My duties included technical projects on advanced reactors and fuel cycles and activities dealing with long-term (sustainable) energy planning and with innovative industrial and institutional infrastructure. The bottom line of the activities was the sustainable development of nuclear energy from national, regional and global perspectives. The main aspects having relevance from the point of view of seven key areas were considered: Economics, Environment, Infrastructure, Physical Protection, Proliferation Resistance, Safety

and Waste Management. The transversal and multinational nature of the projects and activities allowed to identify key opportunities and challenges in establishing a sustainable nuclear energy policy and provided a panoramic view about many countries in this regard. Significant attention was devoted to countries planning to start or to expand their nuclear energy programmes.

In January 2014, I joined the Safety Assessment Section of the IAEA as Nuclear Safety Officer, in the Department of Nuclear Safety and Security, and the duties included in my assignment represent a relevant change as compared to the previous ones.

Which are the main activities in your current position?

The review of IAEA Safety Guides on safety assessment for nuclear power plants (NPPs) has been one of the main duties



At a Consultancy Meeting on Safety Standards.

within the scope of my current responsibilities, to better align them with the new set of design safety requirements revised after the Fukushima Daiichi Accident. More specifically, the safety guides on deterministic safety analysis for NPPs and on format and content of the safety analysis report for NPPs.

As these safety guides are in an advanced status of approval, this year I started working on the applicability of IAEA Safety Standards on design safety and safety assessment to advanced reactor technologies of near term deployment used in the small to medium sized or modular reactors (SMRs). We have started with the design safety requirements to water cooled SMRs and to high temperature gas cooled SMRs. Our planning includes working on the safety approach to establish national design safety requirements and on the applicability of safety guides on both safety analysis and design safety to these reactor technologies; the latter includes design aspects such as the reactor coolant system, the containment system, the reactor core, the instrumentation and control systems or the electrical power systems.

I also contribute to the implementation of the IAEA Programme on Technical Cooperation regarding capacity building on safety assessment in countries that are planning to implement their first nuclear power programme. Here, we organize expert missions and training workshops normally held in the recipient countries. I also col-

laborate with the IAEA's International Emergency Centre in the implementation of its activities.

How did the relocation to Vienna influence your family/personal life?

At the beginning it was a bit difficult. I left Madrid at the end of February with the car loaded up to the roof, the journey lasted three days and the landscape all along the travel mainly offered snow and ice. To be accommodated required time and it was not easy to be so far away from the close family and friends.

Said that, I was aware of what I could expect after having lived more

than two years in Aix-en-Provence, France, and then travelled quite often to several European countries during more than ten years that I was working at ENUSA.

After some time in Vienna, I realized that the quality of life here was good and I started feeling better. In fact, there is a great offer in the city: the beautiful architecture, many parks, an easy access to forests, mountains and ski resorts, areas for meeting and enjoying in every season (e.g. the Christmas and Easter markets, music festivals or Summer Stages) and cultural activities, including the famous opera and concerts of classical music.

Do you keep in touch with Spaniards who live in Vienna or throughout Austria?

Yes, there are a few Spaniards working at the Vienna International Centre (VIC), for the IAEA and for other international organizations. There is a cosy atmosphere of friendship and collaboration among us, especially between those working in the same organization. Regarding the IAEA, we often meet for lunch in an area of the restaurant that we call *La Mesa*. We have a kind of friendly competition on sweets for the coffee from our regions of origin and from countries that we visit; *in respect of regional sweets I think I am the clear winner*. Friends mainly from Argentina and Mexico regularly join the group too.

Moreover, we frequently interact with representatives of the REPER



At DALAT Experimental Reactor (Vietnam).



(Spanish Permanent Mission to the United Nations Organizations in Vienna). The Embassy of Spain organizes social events such as the celebration of the National Day (Hispanic Heritage Day) and several cultural events along the year, e.g. the Vienna's Flamenco Festival, where we also meet Spaniards working outside the VIC.

Furthermore, the Asociación de Españoles en Austria (AEA) offers a forum for social gathering to the Austrian's Spanish speaking community.

Which are the most relevant aspects of your work at the IAEA?

The main priority is the review and application of IAEA safety standards on safety assessment for nuclear power plants. In my view, the IAEA Safety Standards represent significant value regarding the enhancement, harmonization and understanding of key aspects of nuclear safety worldwide, especially after the accidents with severe damage to the core occurred in the last decades. The Safety Standards are widely considered in countries that have already deployed or that are planning to deploy a nuclear power programme and by most of the parties interested in those programmes. Issuing a new or revised standard takes four to five years and involves many qualified representatives from many IAEA Member States who perform detailed reviews of the drafts prepared at the IAEA. Above all, while preparing the drafts we also rely on the contribution of experts internationally recognized in the subject area. The final approval of a safety standard typically implies full consensus on all the issues identified along the review process.

In terms of support provided to newcomer countries, the IAEA helps them building their national capabilities in nuclear safety on solid foundations, including to ensure that they have an adequate level of expertise when starting their nuclear power deployment.

Concerning SMRs, designs include water cooled reactors (land based and marine based), high temperature gas cooled reactors, liquid metal, sodium and gas-cooled fast neutron spectrum reactors and molten salt reactors. Currently there are more than 50 SMR reactor designs in differ-



ent status of deployment, some under construction and other in final, preliminary or conceptual design phase. The activities undertaken and planned at the IAEA regarding the applicability of the Safety Standards to these reactor designs represent, in my view, relevant value for operating organizations and regulatory bodies from countries interested in their near-term deployment.

In general terms I would say that there is no doubt that nuclear power deployment requires the maximum levels of safety and, in this regard, the use of the IAEA Safety Standards is making a fundamental contribution.

What aspects you miss from Spain?

Perhaps the most relevant is the language but also the friendly attitude frequently found in Spain in the social life. On the other hand, I really miss being closer to my family and friends, the proximity to the Mediterranean Sea and the Spanish cuisine, especially fish and seafood plates, so easily available in Spain at reasonable prices. I also miss cultural aspects such as cinema, theatre and books in Spanish.

Working at the VIC somehow reduces the relevance of some of these aspects. About 5000 people coming from many countries of the world work here and more than 500 come every week to attend meetings or conferences; the number goes up to 1000 or even 2000 people some weeks.

The language is English and the offer of food for lunch covers the tastes of many nationalities and individuals; we also have other services available, such as a first step medical service, pharmacy, dry-cleaning and offices for banking, insurance or mobile telephone.

Would you encourage young people to widen their professional horizon beyond our national frontiers?

Yes, I would do. In my view, it facilitates establishing solid technical basis in areas by which we feel professionally attracted, incorporating also international practices regarding technologies and processes or managerial behaviours. On the other hand, open mind substantially helps make a career and crossing borders might represent a good contribution to this aspect.

It seems also good that Spanish companies and organizations look for competitiveness in terms of recruitment conditions for qualified professionals. Finally, I think that family aspects should be part of the general plans without being relegated to a second level.

Saying that, the convenience of paying attention to improving language skills, primarily proficiency in English, becomes obvious, although recognizing that such dedication perhaps should concern all professionals and not only those who come from some countries. ■