



by Dana Sacchetti

The Peer View

Through its Operational Safety Review Team (OSART) programme, the IAEA is supporting safety advancements in nuclear infrastructures.

As many countries' nuclear plants begin to creep up in age and utilities seek extensions of the lifespan of facilities, the global focus upon improving global nuclear safety has never been stronger. The IAEA assumes a unique responsibility in combining knowledge and experience to help countries to advance safety by hosting a variety of programmes and setting of international standards. The lion's share of the IAEA's nuclear safety work is accomplished via the application of peer reviews and advisory services that support the advancement of effective safety infrastructures in IAEA Member States.

One of the more prominent IAEA efforts that helps countries achieve higher levels of safety is the Operational Safety Review Team (OSART) programme, whereby internationally-based teams of experts conduct reviews of operational safety performance at nuclear power plants.

OSART's Start

Throughout the 1970s and 1980s, the IAEA concerned itself primarily with the safety of the construction of nuclear power plants (NPPs). Yet the Three Mile Island incident in 1979 created a renewed sense of urgency about the operational safety of nuclear power amid the growing number of reactors worldwide. The US began to create services to peer evaluate the safety of its own fleet of reactors, and the IAEA, recognizing the usefulness of such a programme, decided to internationalize peer safety and in turn created the OSART programme.

The reach of OSART is expansive: to date, OSARTs have visited nearly every major type of nuclear reac-

tor, and over 150 reviews have been conducted since the programme's inception in 1982.

Three Stage Process

The OSART review is a process that begins with a request from a country for a safety review, and can occur in three stages.

Pre-Operation Safety Review Team (Pre-OSART) missions are conducted during the construction and commissioning phase of a plant's life. These missions help ensure effective preparations for commissioning and operations.

Safety Review missions consist of a regular OSART mission, offering an in-depth examination of design features most closely related to safe and reliable operation. Human performance issues and recognized design weaknesses are assessed in an integrated way. These regular OSART missions are concluded by follow-up visits, which take place approximately 12-18 months after an OSART mission. The follow-up provides an independent assessment of progress in the resolution of issues identified in the OSART mission.

Once the IAEA receives the review request, it begins to assemble a team of 10-12 experts to undertake the mission. The team is comprised of specialists from around the globe who have senior-level nuclear operator experience, and each team member is assigned an area of focus during the mission.

The bulk of the work for a regular OSART is carried out during an intense three weeks of inspections at the plant, whereby OSART mission staff conduct interviews with plant staff, observe plant workers,

OSART

The OSART programme broadly covers nine operational areas:

- ① management, organization and administration;
- ② training and qualification;
- ③ operations;
- ④ maintenance;
- ⑤ technical support;
- ⑥ operating experience;
- ⑦ radiation protection;
- ⑧ chemistry; and
- ⑨ emergency planning and preparedness.

A recent enhancement of the OSART review is the addition of a dedicated expert to review the area of operating experience.

The OSART programme started in 1982. To date a total of 152 OSART missions have been carried out in 32 countries.

and analyze documents related to plant operation. Rather than examining the plant's physical design, OSART team members are tasked with studying the operation of the plant and the performance of the plant's management and staff. OSART focuses more on the human aspect of a nuclear plant rather than the technology behind its operation.

The OSART team keeps in constant communication with the plant hosts and records all its findings during its time at the plant, and the emphasis is always placed on improving safety to the highest international standard possible. OSART reviews are based wholly upon IAEA Safety Standards, which are established to give guidance to Member States on the many aspects of the safety of nuclear installations.

"The working methodology of the OSART programme—from the pre-OSART meeting to the mission to follow-up — encourages the development of safety work in general," said Olle Andersson, who was a host plant peer during a 2008 OSART mission to Sweden's Forsmark NPP. "The programme, when well utilized, brings improvements in many areas. It put the focus on deficiencies that one might not have taken notice of because one has become 'blind to defects in one's own home.'"

Yet likely the strongest endorsement for the importance of the OSART programme can be found in France, one of nuclear's strongest proponents. Since 1985, France's regulatory authority Autorité de Sûreté Nucléaire (ASN) has requested an OSART safety review on an almost annual basis. Within the next few years, each reactor within the French nuclear fleet will have undergone an OSART review at least once.

For a country with a long history of operational experience such as France or the US, the value of OSART is found in the international knowledge transfer that takes place during and after the mission.

"The mission was very beneficial to us and our site as it brought many different perspectives and experiences to bear for us to learn from," explained Tim Mitchell, site Vice President for Arkansas Nuclear One in the US, who was also the primary site contact for another 2008 OSART mission.

"Our key takeaways from the OSART mission were to make sure my country's paradigms are not looked at as the only approach to solving problems. International experience can provide other experiences and approaches," said Mitchell.

Evolution and Future

Since the programme's inception nearly 30 years ago, the programme and the environment in which OSART operates have seen many changes. Globally, transparency on the part of the nuclear industry has gradually improved, with most countries realizing that openness and timely communication regarding safety is now a guiding principle.

In the early days of the OSART programme, there was a dearth of communication between the OSART team and the plant peer team. Previously, recommendations and feedback were collected solely by the OSART team and were only delivered in a final report at the end of the review. But over time, the teams have changed this practice to systematize daily contact among all members of the team, reducing the number of surprises that may arise towards the conclusion of a mission.

Over the decades, guidelines and operational safety practices have become internationalized, a process that has been aided by review services such as OSART. The siloed approach to nuclear safety on a country-by-country basis has evolved and given way to a regime of international cooperation and knowledge sharing.

Another change was that a follow-up mission to the OSART review process became standardized in the late 1980s. Inclusion of operating experience was added as an area of focus in 2004, and there are now several additional areas that can be requested as a plant host wishes. Commissioning, long-term operational safety review, and other options are available for hosts to choose from. The programme's leaders are now also making preparations to put forward a 'corporate' OSART service. This offering would

examine the inner workings of corporate bodies of utilities with multiple nuclear plant sites, which may have a bearing on operational safety.

Finally, OSART team leaders within the IAEA are aiming to broaden the programme's reach by encouraging countries which have not held an OSART review in the past decade to request new missions. The thinking is that countries with a limited number of nuclear units or those that are geographically remote can benefit from the broad review of an OSART mission, and the IAEA is now in discussions with countries which have not hosted an OSART mission for some time.

With expectations for nuclear power growth continuing to rise, the goal of achieving even greater operational safety is imperative. As the OSART programme enters the end of its third decade of service, review safety services continue to be a quiet yet vital asset to global nuclear safety. The IAEA will continue to support review services such as OSART to keep the nuclear safety regime strong. ☸

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An Open Business by Dana Sacchetti

Report from OSART Mission of France's Cruas Nuclear Power Plant.

It's a bitterly cold December day in Cruas, a small village situated along the Rhône River in southern France.

Today is a big day for the town, and there's a noticeable business in the town's centre. A couple hundred people quickly make their way through the rain and enter a large assembly room in Cruas' town hall. Those assembled, including workers from the nearby Cruas Nuclear Power Plant (NPP), journalists, town officials, and staff from the French nuclear industry and regulatory body, sit in hushed silence as a unique meeting begins.

A group of 10 nuclear safety experts, from countries as far flung as Japan, South Africa, and Hungary, take the stage to make remarks on the operational safety performance of the Cruas plant, a large 4-reactor facility that accounts for nearly 5% of France's electricity production. One by one, each expert addresses the audience, giving his or her assessment on what the plant does well, what can be improved, and other constructive feedback that can advance plant safety. The comments and feedback by the OSART team for the Cruas plant are balanced in their positive feedback and recommendations for improvement. As each expert provides commentary, murmurs and chatter can be heard among the plant workers.

It's a unique thing; inviting a team of strangers to your workplace to study your every move for three weeks, and then to have them speak about your plant and its performance in such a public forum.

Welcome to a typical OSART exit meeting, where a hand-picked team of nuclear safety experts summarize their assessment of the operational safety of



an NPP. The transparency and openness with which the meeting progresses is surprising to many who are new to the process, but it bodes well for maintaining a high level of safety within France's nuclear industry.

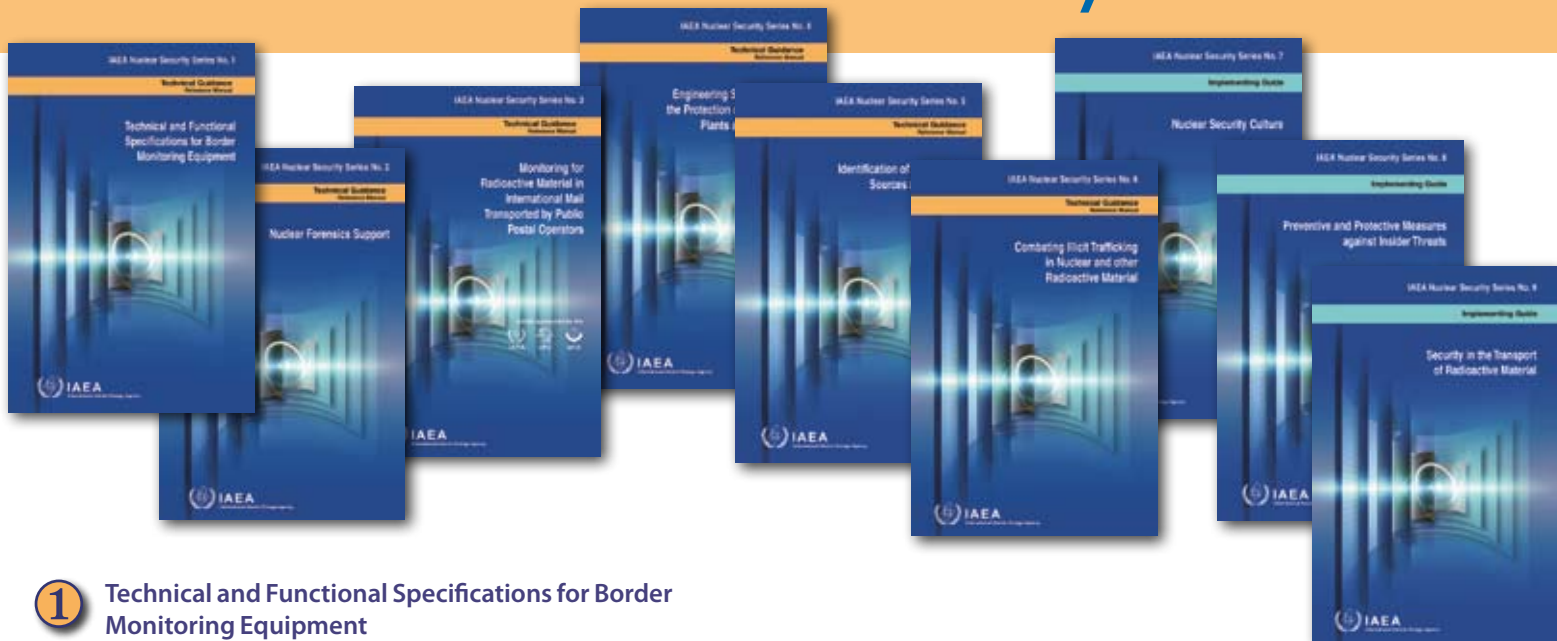
Very few industries open their doors to such scrutiny, analysis, and public discussion of performance, but then again, nuclear power isn't any ordinary industry. The meeting progresses and concludes with a press conference, where journalists ask pointed questions directly to OSART team leaders and Cruas plant management.

Maintaining the highest levels of nuclear safety is a complex task, a collective responsibility. With missions such as OSART providing transparent, constructive feedback, the effort continues. ☸

In 2009, OSART experts reviewed the operational safety performance of the Cruas plant, a large 4-reactor facility that accounts for nearly 5% of France's electricity production.

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