

# OSART Good Practices

## EMERGENCY PLANNING AND PREPAREDNESS

### Response Functions

#### Kozloduy 1/4, Bulgaria

Mission Date; 11-28 January, 1999

Along with the civil defence programme compulsory for national schools an experiment is being carried out, which promotes nuclear safety to the young generation through issuing magazines, presenting children's shows and exhibiting children's paintings. The programme is carried out in all schools within the 30 km emergency planning zone.

The "Hello Earth" magazine is a non-traditional educational tool, which in an easy, plain and informal way arouses children's interests in topics such as calamities, accidents and disasters. The "Hello Earth" show is an original summary lesson for 7 to 11 year old pupils, finalising the 4 year school training in this area.

The objectives of the show are:

- retain the acquired knowledge for a long time;
- expand the knowledge about nuclear power plants, radiation protection and demonstrate the advantages of nuclear energy over the conventional energy sources;
- improve practical skills through competitions;
- cultivate behavioural models of self-protection, mutual aid and friendship in case of trouble;
- emotionally involve children in the learning of a "boring subject".

The picture exhibition "I saw the trouble" provides a feedback of the acquired knowledge, the emphasis being put on the idea rather than the artistic values of the pictures.

#### Nogent, France

Mission Date; 20 Jan.-6 Feb., 2003

Nogent NPP has instituted many unique and beneficial ways to maintain contact with the residents in the area of the plant. Among these projects are:

- "Natural Network of Opinion" since Dec. 2002. This kind of close contact with public by NPP staff will strengthen the liaison with public
- One-to-one contact with residents to evaluate the image of the plant and to increase the plant staff's sensitivity to local concerns
- A quarterly journal "L'Echo des Tours" with information on the plant and emergency actions
- A toll free number for residents to call
- Excellent facilities for briefing the press
- CLI (Committee for Local Information) of Nogent-Sur-Seine plays important role for the liaison between Nogent NPP, public and media
- Personal distribution of potassium iodine tablets by volunteers fire fighters, Red Cross, etc. which also provide an opportunity to discuss emergency activities one-to-one with residents.

## Kashiwazaki 3/6, Japan

Mission Date; 1-18 Nov, 2004

The plant has established comprehensive Emergency Information Procedures for public information to inform the public during an emergency. The significant changing occurred. The site held 650 meetings and met with 46,000 local citizens and government personnel to enhance the public relation. Environmental monitoring real-time data could be access on the Internet by local citizens.

The plant has sufficient, qualified and trained personnel assigned for public information activities. Several positive actions were evident, since the Mihama NPP steam leakage incident the plant performed the inspection and the report to the public. After the earthquake on 2004 October 23 and November 4, station personnel promptly prepared information inform the media and the public on associated emergency aspects. The public information facilities in the TSC were well equipped and properly maintained for allowing quickly response to the public.

## Blayais, France

Mission Date; 2-19 May, 2005

Weather forecast website applied proactively to support emergency response initiation. Bearing in mind the significance of risk of severe weather events, the plant has set up the mini "weather forecast website" issued by Meteo France. This is an exclusive application for the plant and aims to monitor local weather conditions and make predictions regarding the preparedness measures to the anticipated weather conditions. The web site comprises a seven day forecast for the Gironde region, a set of forecast, report every three hours period, and infrared satellite images every six hours.

According to this local weather forecast and anticipated weather conditions the preventive measures could be initiated in the plant. In case of anticipating severe weather the plant prepares the units and the emergency plan (PUI) can be triggered. So emergency staff can arrive on-site before severe weather conditions reach the site.

The application could be an example for other plant with severe weather operating experiences.

**Use of Video Conference during Emergency Response**

Volgodonsk NPP has developed an innovative system for interaction of several support and oversight organizations with the site staff during emergency response. The plant has a video conference capability that links the Rosenergoatom Concern Emergency and Technical Support Centers, 3 national laboratories, the Federal Crisis Center, the reactor designer and the reactor manufacturer with the emergency management team in the Plant Emergency Center. Generally, the lead manager in each location participates in the ongoing video conference. This allows emergency management across the various response organizations to discuss and resolve issues rapidly face-to-face.

The system can operate through fiber and satellite channels ensuring good reliability. The system is also used for routine communications between counterparts to facilitate sharing of information. However, it is a particularly effective tool during emergencies to link together decision makers and technical staff from disparate support organizations. The use of this system is routinely practiced during drills and exercises increasing effectiveness and realism, as well as improving response coordination.

Estimated accidental release analysis programme "SaTu" including plant premises.

The plant use an analysis programme, named "SaTu" support the on and off-site emergency organizations to estimate accidental releases in advance and the recommendations for protective actions can be estimated based on averted dose. The accessibility of the plant locations (containment, reactor building and other plant rooms) and potential needs for improving radiation shielding can be studied by SaTu. With SaTu system it is possible to give a first estimate after starting the event for 2 hours. When it is activated it continuously maintains and completes the estimate. By using SaTu the accident scenario for exercises are more comprehensive and realistic.

Fortum Nuclear Service (FNS) has developed the "SaTu" system in 2002. In cooperation with the plant, FNS has implemented this system. People have been trained in FNS group and the plant emergency organization to use this system during accidents with radiation release. The main goal of this system is to assess and forecast the release and transportation of ionized materials during accident situations.

The assessment is based on plant process, safety, ventilation and containment system status. The "SaTu" system calculates the radionuclide concentrations in the plant and the releases to the atmosphere. It calculates also the radiation levels in different locations in the plant. The estimates of source term can be recalculated based on plant safety system status and actual radiation level measurements.

The "SaTu" system has been made to use in the emergency plan for make prognoses accidental releases, plant design in assessing the need for radiation shielding for accident situations. It is also made for emergency exercises creating accident scenarios and to use in training radiation specialists to understand and evaluate the behavior of radioactive materials in accidents situations.

This system is very useful to analyze on and off-site emergency situations with radiation releases to take protective actions.

Several means are used by the site to optimize the time in emergency response.

- To ensure rapid access of emergency personnel to the site, when access is limited, specific coloured stickers have been developed and distributed for all vehicles of persons having a role in case of emergency and thus being authorized to enter the site. These coloured stickers also mention the vehicle number plate and are labeled "PUI" (Internal Emergency Plan). The colour of the sticker changes every year. There is an agreement that a specimen of the PUI sticker is sent to the authorities managing traffic in the event of a limited access zone being set up. As well as allowing entrance to the plant, the stickers enables police on roadblocks to identify emergency plan personnel and allow them to pass through. These sticks represents less then 10 % of the distributed stickers.

- If off-site emergency services have to come on site, the meeting points for emergency response teams are defined, signposted on the site and indicated on a plan provided by guards when each emergency service vehicle (fire brigade, ambulances) comes on site. Firstly, a blue flashing light system is activated from the control room to guide the fire department to the affected unit. There are 7 flashing lights on site. In order to ensure that emergency services arrive rapidly at the accident location, a member of the first response team rolls out a tape from the meeting points to actual location of accident. A tape is available in a box at each "relais EPI" (first response meeting point).

- As a result of feedback from EPP exercises, a need for a short document on immediate response management was expressed. Therefore the plant decided to draw up immediate response sheets for each role in the emergency plan on call system. These sheets are in a standardized credit-card sized format and fit easily into a pocket.

Thanks to these immediate response sheets every role in the emergency plan has all the required information for the immediate actions required in the event of an emergency.

The front side of the document is generic, while the back is specific to each role.

Reference is made to the emergency plan. Accordingly to each type of event immediate response sheets contains following data:

- Phone, fax and cell phone numbers of contact persons;
- Summarized description of the roles and responsibilities of that respective individual;
- Proper reflex sheet, good practices and immediate actions to perform;
- Sequence in emergency deployment rooms, locations of actors and identification of information flows.

There are similar immediate response sheets for emergency functions at corporate level. These various improvements optimize time in an emergency response. They ensure that site emergency personnel are able to get on to the plant rapidly and have all the information and instructions for initial actions available in a user-friendly form. They likewise ensure that the off-site emergency services can rapidly reach the location of the accident.

The plant has developed a tool that identifies strategies for solving technical problems during a nuclear emergency. This tool is the Technical Handbook for Plant Operational Manager – Technisk Handbok for Anlaggningsledare (THAL).

Using this tool, the Plant Operational Manager (AL) presents the Site Emergency Director (OL) with an assessment of the feasibility, data needs, resources, and expected results for solving technical problems that are not covered by General Disturbance Procedures. This high level view of the management of technical issues during an accident is unique in the Team's opinion.

Instead of entering directly into Severe Accident Management Guidelines (SAMG), the tool gives management-level guidance on what is needed to solve the problem, who can help and what tools can they use. The THAL does not replace the SAMG, which are used by a separate group of engineering and safety analysis specialists. The THAL explains when to start the SAMG analysis and what to expect from the group of specialists.

The THAL takes the approach that in order to be able to make decisions during a severe accident, different alternative strategies need to be considered. The THAL is a knowledge based handbook where such strategies are described, along with other essential information. The THAL also identifies the short term actions that are important for long term accident management. The THAL is organized by issues such as

- Short term actions (minimizing the spread of radioactivity, core damage assessment, reactor vessel integrity assessment, etc...)
- Long term actions (containment pH adjustment, measuring activity and chemical parameters in the containment, hydrogen control, etc...)
- Instrumentation available in the containment
- Radiological environment (habitability)
- Personal safety measures
- Alternatives for electrical supply
- Communication means
- List of mobile equipment available in the region (pumps, generators, etc...)
- Operation at non affected reactor units
- Process systems relation

Each issue is covered in a dedicated section that contains

- o Info
- o Strategy
- o References

Using the THAL manual, the Plant Operational Manager (AL) can provide the Site Emergency Director (EL) with a very good overview of the decisions he may have to make during the emergency.

## Cruas, France

Mission Date; 24 Nov -11 Dec., 2008

The availability of a dedicated emergency response mobile command post and response team equipment vehicle (PCOM van) results in more rapid and effective response to emergencies on-site, as well as more efficient coordination between on-site and off-site responders.

- First and Second level emergency response teams, as well as the Head of Rescue (EDF) and the Commander of Rescue Operations (Local Fire Service), are situated close to the event in a protected, mobile location. This provides for ease of communication and coordination of the response.
- The PCOM van is intended for use during on-site fire, medical, and radiological emergencies.
- The emergency team's response time is shortened since they can equip themselves for the emergency in the PCOM van close to the emergency location.
- Eliminates the need for response teams to transit on foot in heavy protective gear to reach the site of the emergency.
- The reduction in response time should reduce both the risk to the personnel as well as potential damage to plant equipment.
- The van is tested weekly for operability/availability, and maintenance responsibilities are established.