

**OSART Good Practices**  
**EMERGENCY PLANNING AND PREPAREDNESS**  
**Training, Drills and Exercises**

**North Anna 1/2, USA**

Mission Date; 24 Jan-11 Feb, 2000

The Emergency Plan training staff uses the plant electronic mail system to supplement the instructional needs of the emergency response organization between annual re-training requirements. This maintains a high level of awareness in the various disciplines. For example, changes in response procedures that have been made and changes caused by a drill comment that provides immediate corrective action. Electronic mail is also used as a medium for delivering annual retraining materials. Training uses self study packages assigned by electronic mail with electronic read receipts returned to the instructor.

The Emergency Plan training program is conducted as if it were an accredited program. A job task analysis was prepared initially for each position. A set of specific modules (Lesson Plans) for each profile (job) of the emergency organization has been developed. Each module comprises teaching materials and handouts. After the initial training and test have been given, there may also be a psychomotor job test required, which should prove that the candidate could accomplish given tasks in predetermined timeframe. A database for scheduling the retraining exists which also provides a forecast of when personnel will become overdue.

During the procedure revision process, each procedure is evaluated for any potential training needs. If training is determined to be required, then it is given prior to procedure implementation. This may be by electronic mail or, if necessary, full classroom instruction.

## Civaux, France

Mission Date; 12-28 May, 2003

A well-developed and comprehensive exercise programme associated with a strong commitment of management and of the appointed representatives of command centres leads to a good state of preparedness of involved plant staff members.

Five types of exercises are organized. These exercises are validated by the Technical Safety Group indicating a strong commitment of the management for these activities:

- Global exercises: technically oriented or fire/health oriented - 6 per year (3+3), of which 1 per 3 years the national crisis teams of EDF participates.
- National exercise with participation of local and national organizations and authorities: 1 per 3 years (next in December 2003)
- Mobilization exercises (with effective moving to the site): 2 per years outside working hours - criteria: full activation of the PCs in less than 1 hour
- Assembly exercises (for all personnel): 1 per year during working hours. 1 every 3 years with activation of the back-up centre with (partial) personnel effective evacuation.
- For each unit, effective test of reactor building evacuation per each outage.

Moreover, additional drills are also performed:

- 4 communication tests at home (outside working hours) with acknowledgment and verification followed by immediate corrective actions, if needed.
- 6 security oriented exercises (intrusion risk).
- a weekly fire oriented drill exercise for the on-site second intervention teams (supervised on field by management).

Effective participation in exercises is systematically recorded ensuring the necessary tracking in order to respect the requirement of at least 1 exercise/2 years for each of the involved people.

The number of exercises, their scope and systematic evaluation and feedback are worth being highlighted.

## Krsko, Slovenia

Mission Date; 20 Oct. 6 Nov., 2003

Severe accident management is incorporated in the scope of emergency exercises. This enables the Main Control Room (MCR) crew, field operators and personnel in TSC to enhance their ability to cope with such situations and the use of EOP's and Severe Accident Management Guidelines (SAMG).

Plant status data, for example status on critical safety functions and systems, monitored in MCR is also accessible in TSC, OSC, EOF and SNSA. This is what would normally be expected. Also the similar data from the plant simulator is made available to these facilities. This feature makes it possible during an exercise to assess plant status exactly the same way as during a real situation. The team notes that this significantly enhances the training effect of the exercise as well as experience gathered from the assessment procedures.

## Pickering, Canada

Mission Date; 9-26 Feb., 2004

The utility conducts full scale site evacuation drills every three years. The 2003 site evacuation drill was large in scope, including site assembly and accountability, site-wide staff release and dismissal, traffic management and transport logistics.

Vehicle traffic data was collected for a period of a week before and 3 days after the drill around the site to monitor flow and volume. This data is used by the City and Region for traffic modeling, intersection signaling and roadway planning.

The drill employs the use of electronic vehicle counters on key egress paths and include Regional Police interface and traffic control at the plant site boundary. The normal end of business day for local business and industry contribute to drill realism by simulating and validating a worse case evacuation scenario.

An extensive Communication Plan was issued to address station and external stakeholder participation. Employee engagement was reinforced through supervisory rollouts and general employee awareness refreshers.

4189 individuals were evacuated from the site within approximately one hour. The critique report was very self-critical and several significant process improvements were identified and acted upon. This has been identified as a good practice and performance.

## Pickering, Canada

Mission Date; 9-26 Feb., 2004

Pickering has a solid Systematic Approach to Training (SAT) Emergency Response Organization (ERO) qualification program that employs knowledge and performance based elements. Initial qualification consists of a traditional lesson based instruction and evaluation of the program fundamentals, followed by a position specific procedure and Operational Experience / Lessons Learned review. Upon completion of the knowledge based training, a candidate is recommended for continuation by a qualified incumbent. Certification is completed through a detailed documented evaluation of performance in a drill.

The Operational Experience/Lessons Learned review is provided by a state of the art web-based system that is linked to the station qualification database and records the time spent and completion of the required review.

The performance evaluation sheets are tied to the position specific implementing procedures and cross-referenced to the overall ERO performance objectives.

Taken as a whole, the Pickering ERO training and qualification program exceeds international standards and is considered a good practice.

Organization of drills and exercises, testing of the public information activity.

The plant conducts periodic drills and exercises to test the adequacy of the Plan and implementing procedures, emergency equipment, and the preparation and training of emergency personnel. Emergency drills are supervised instruction periods aimed at testing, developing and maintaining skills, and to ensure that adequate emergency response capabilities are maintained during the interval between evaluated exercises. Periodic drills are conducted for all five emergency teams (one per year for each team) involving a combination of some of the principal functional areas of the organization's onsite emergency response capabilities. Participants have the opportunity to consider accident management strategies, supervised instruction are permitted, and to resolve problems (success paths) rather than have controllers intervene. Communications drills are organized monthly to test the readiness of the members of the emergency response team on duty, of the communications network between the plant and state and county governments within the ten-mile emergency planning zone and the NRC. Communications between the plant, federal emergency response organizations, and states within the 50-mile EPZ are tested quarterly; while communications between the plant and state and local emergency operation centers and field assessment teams are conducted annually. Fire drills are conducted in accordance with the Fire Protection Programme. Medical emergency drills involving a simulated contaminated individual are conducted annually. Radiological monitoring drills are conducted annually, these drills include collection of the appropriate sample media both on site and off site as the drill scenario requires. In-plant radiation protection drills, including response to and analysis of simulated elevated airborne and liquid samples and direct radiation measurements are conducted every six months. Augmentation drills requiring travel to the site are conducted once every 24 months. Severe Accident Management Guideline table-top and/or inter-facility mini-drills are conducted periodically and involve a combination of some of the principal functional areas of the organization's onsite emergency response capabilities. The drills are evaluated by a drill observer. The degree of participation by outside agencies in conducting these drills may vary and their action may actually be simulated. Any state or local government located within the plume exposure pathway emergency planning zone will be allowed to participate in the drills when requested by such State or local government.

An emergency exercise aiming at testing the integrated capability of major response organizations is conducted once every two calendar years and it is based on a scenario which is ultimately declared at least as a Site Area Emergency and it covers all main activities of the plant's emergency response organization. The scenario are varied from exercise to exercise such that all elements of the plant, county, and state plans and emergency organizations are tested within a 6-year period. Each organization should make provisions to start an exercise between 6:00 p.m. and 4:00 a.m. Every sixth year, the exercise is expanded to allow involvement of the federal response organizations in addition to the state and local organizations. Advance knowledge of the scenarios and the times of the exercises are kept to a minimum to ensure a realistic participation by those involved. Qualified observers from Progress Energy, Federal, State, or local governments will observe and critique each exercise.

During an emergency, the Brunswick Joint Information Center (JIC) is staffed with an integrated staff from the utility, State of North Carolina, county, and federal agencies such as the NRC and FEMA. The JIC is activated and staffed with utility personnel during each team training drill as part of the annual drill cycle. Frequent drill participation allows JIC personnel an opportunity to maintain the skills and knowledge essential to good performance during a real event, and increased opportunities to practice information exchange with the Emergency Operations Facility (EOF) at the site. State and county

personnel participate with the utility at the JIC during the biennial NRC/FEMA evaluated exercises. In addition, state/county public information personnel are trained on JIC operations and process changes on an annual basis. The drills/exercises at the JIC include participation of individuals assigned as "mock general public" who make calls to the JIC rumor control staff with questions concerning the event; and "mock media" who attend press conferences and ask questions to gain insight into the cause of the emergency, offsite effects, etc. Interfacing with mock media and general public during drills/exercises provides the rumor control staff and individuals assigned as company spokesperson and technical spokesperson additional training on communications/interface with the public and news media during an actual event.

The emergency preparedness supervisor determines the corrective actions necessary and the schedules for performing them and evaluates the corrective actions taken. The tracking of corrective actions is made in the frame of the plant 'Corrective Action Tracking System'.

## Volgodonsk, Russia

Mission Date; 1-19 October, 2005

### Use of Terrorist Scenarios in Drill and Exercise Program

Volgodonsk NPP has recognized that in this changing world it is appropriate for a NPP emergency preparedness program to train on the response to terrorist acts. In 2002 and 2004 major exercises were conducted to train the emergency response organization (ERO) on response to plant damage resulting from terrorist acts. This was not training in physical security response, which is covered under a different program, but focused on emergency plan response. These exercises serve to improve the interface between operations, emergency response and security as the plant responds to the unlikely event of a terrorist attack. Areas for improvement were captured and have been corrected. This process strengthens emergency preparedness.

This program is unique. It does not require that more drills/exercises be conducted, but only that the initiating conditions in scenarios are changed to reflect the affects expected from terrorist acts. Although emergency response may largely remain the same there are important differences. There may be casualties and areas of the plant that are not secure. Damage to plant systems would be due to malicious human acts rather than random failure events. The interface with offsite organizations would be greatly different as national security organizations would be heavily involved. Communications to the public may differ also as there may be the need to avoid providing information valuable to any remaining terrorists.

Few countries have integrated the response to terrorist acts into their drill and exercise program. Although some countries have embarked on a process to implement such exercises, Russian implementation began many years ago.

## Mihama 3, Japan

Mission Date; 15 Jan.- 5 Feb., 2009

Comprehensive off-site emergency drills, including resident evacuation have been conducted every year with Mihama station participating every four years. Fukui Prefecture conducts yearly off-site emergency drills with participation of a few hundred local residents, which are quite comprehensive, covering the items listed below (\*: drills where the licensee lends its cooperation):

- Emergency communication drill (\*)
- Emergency taskforce operation/management drill (\*)
- Off-site center operation/management drill (\*)
- Self-Defense Force dispatch drill
- Emergency monitoring drill (\*)
- Emergency exposure medical treatment drill (\*)
- Resident evacuation drill (\*)
- Evacuation center operation/management drill (\*)
- Public relations drill (\*)
- Traffic control drill
- Nuclear operator on-site fire brigade firefighting drill (\*)
- Training for relevant authorities to deal with the region evacuated
- Support team mobilization training, based on the Fukui Prefecture Wide Area Mutual Firefighting Support Agreement

Off-site centers have been established in the Fukui Prefecture municipalities with nuclear power stations (Mihama Town, Takahama Town, Ohi Town, and Tsuruga City). The four municipalities have taken turns conducting these comprehensive drills where municipalities and power stations have participated.

The yearly off-site comprehensive drill significantly improves the public awareness and sufficiently supports the preparedness of off-site and on-site emergency response organizations.