EVALUATOR/CONTROLLER PRACTICUM FOR U.S. DEPARTMENT OF ENERGY EMERGENCY EXERCISES

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SUMMARY

Argonne National Laboratory has designed a practicum to help ensure that exercises at Department of Energy (DOE) facilities provide results that will be useful in maintaining or improving emergency preparedness while ensuring the safety of the public and the exercise participants. Participants in the first two offerings of the practicum came from DOE facilities nationwide. The practicum augments the usual forms of controller and evaluator training with actual practice in carrying out controller and evaluator roles. Feedback from participants indicated substantial benefit from the training. Many of the participants expressed a desire to present such training to others at their home facilities.

II. DESIGN OF THE PRACTICUM

The practicum begins with a safety orientation and introduction to the exercise site. In keeping with the practicum’s focus on on-site and off-site public health and safety, it is important for visitors to the host site to be familiar with actual safety procedures that pertain to their stay. A briefing using site maps, photos, and video introduces course participants to the site. Also, a driving tour of the facilities to be involved in the exercise familiarizes participants with their location and layout.

The practicum is designed for persons who have acquired some experience in exercise control and evaluation, or who have completed DOE’s first course in the subject. However, experience with the first two pilot offerings indicates that it is helpful as a refresher to review the principles taught in the first course, to ensure that all participants in the practicum know what is expected of them as controllers and evaluators.

Following the orientation and refresher, the practicum moves quickly into “exercise mode,” in which the course participants become controllers and evaluators of staged exercises. The exercises begin with typical pre-exercise briefings, acquainting participants with the exercise materials (purpose, scope, objectives, extent of play, scenario, timeline, etc.) and the facility’s emergency response plan. Up to 20 participants—the maximum for which the course is designed—are assigned to control or evaluate activities at five locations: the incident scene, the fire alarm office, an
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emergency operations center (EOC), an emergency press center (EPC), and a control cell. The course presents two exercises back to back on successive days, so that most participants have a chance to be a controller in one exercise, and an evaluator in the other.

Each exercise runs for about two hours. The exercises begin with notification to the fire department dispatcher of emergencies at the incident scene. Fire, ambulance, and health physics crews are dispatched. The emergencies are serious enough to warrant activation of the EOC and EPC, with involvement of off-site authorities simulated by the control cell. The exercise players include members of the facility’s actual emergency response groups, as well as volunteers who play the roles of victims, evacuees, etc. But, since the purpose of the course is to train controllers and evaluators rather than responders, the exercise players are given instructions on specific things to do wrong intentionally—for example, enter a contaminated area without wearing proper protective clothing. These actions are designed to force evaluator trainees to observe and document player errors. The instructors and players also throw obstacles into the exercise play—such as deliberately throwing the exercise timeline off track—in order to force the controller trainees to make decisions during the exercises.

After each exercise, the controller and evaluator trainees follow a typical post-exercise process, including developing a log of exercise events, debriefing and critiquing the players’ actions, and documenting exercise findings in written reports. These activities give the evaluator trainees practice in both oral and written expression of their findings and recommendations.

It is then that the practicum can close the loop on the training, because the instructors already know the errors and obstacles that the controller and evaluator trainees should have encountered. Therefore, it is possible to discuss with the class the errors and obstacles, and how the class members dealt with them.

Each offering of the course is followed by one final level of evaluation, in which the course participants and instructors evaluate the effectiveness of the course itself as a vehicle for training. Refinements and improvements have been made to the course after each of the pilot offerings.

III. COURSE MATERIALS

Because the practicum presents two exercises as the basis for learning, the course materials include all of the documents that normally are associated with an exercise, plus additional materials for training purposes.

A. Emergency Management Plan

One of the fundamental principles taught to exercise controllers and evaluators is that the evaluation of exercise activities must be conducted in the context of the exercising facility’s emergency management plan. Therefore, the instructors developed a “Mock Comprehensive Emergency Management Plan (CEMP)” for players’ and trainees’ use during the exercises. Because the first two pilot offerings of the practicum were held at ANL, the mock CEMP was modeled after ANL’s actual CEMP. Some modifications were required, however, to adapt the mock CEMP for training use. For example, given the scenario conditions postulated in the practicum’s exercises, ANL’s actual CEMP calls for mobilizing more resources than could reasonably be used in the practicum. Therefore, we simplified the mock CEMP to call for a less massive response. (However, the practicum exercises still called for a large number of responders and role players, as described later.) Even simplified, the mock CEMP still contains seven major sections and five appendices addressing such subjects as the emergency management organization; notification and communications; event classification and emergency planning zones; emergency facilities and equipment; public information; health physics procedures; and medical procedures.

B. Exercise Package

Practicum participants are given a complete exercise package for each exercise. The introductory section of the package identifies the purpose and scope of the exercise, describes the operation of the control cell, and discusses provisions for identification of exercise participants.

A section on Exercise Rules and Safety Plan presents ground rules for the exercise and identifies exercise simulations (general exceptions and limitations to full demonstration during the exercise). This section also discusses exercise safety and security provisions, termination procedures, and arrangements for post-exercise debriefing.

A section on Controller and Evaluator instructions summarizes the roles and responsibilities of controllers and evaluators. This section gives general instructions on handling unexpected exercise activities, and introduces the exercise control documents.

The fourth, and longest, section of the exercise package contains the actual exercise control documents for each exercise. These documents include a narrative summary of the scenario, an exercise timeline, specific locations and assignments of controllers and evaluators, statements of the exercise objectives and objective-specific extent of play limitations, a Master Scenario Events List, and a complete set of exercise messages to be injected by the controllers. Also, since the exercises include the inject of “live” news broadcasts (actually prepared in advance on videotape), the exercise package contains transcripts of the broadcasts for controllers’ and evaluators’ reference.
C. Exercise Evaluation Forms

A set of exercise evaluation forms is provided to the evaluator trainees. Among DOE facilities nationwide, there is not yet a standardized format for evaluating exercises; so, it was not possible to develop “typical” exercise evaluation forms. Instead, we drew on a format used at some facilities, adapted from the exercise evaluation methodology used in the Federal Emergency Management Agency’s Radiological Emergency Preparedness program. In this format, evaluators are given a set of Points of Review key to each exercise objective. The Points of Review provide objectively measurable criteria for helping to determine whether the exercise objective is met. They also help guide the evaluator as to what elements of player performance should be considered under each exercise objective.

The Points of Review are accompanied by open-ended reporting forms for generating a Narrative Summary and a summary list of Issues. The Narrative Summary is a full textual report of the demonstration of the exercise objective. The list of Issues, culled from the Narrative Summary, identifies for quick reference any elements of exercise performance that were found to be in need of improvement. The complete set of Narrative Summaries and Issues for all exercise objectives at all player locations forms the core of the final exercise report.

D. Player Guides

For usual exercise planning purposes the CEMP, the exercise package, and the exercise evaluation forms would suffice as complete documentation. However, for these exercises, designed for the players to train the controllers and evaluators, it was necessary to develop player guides for each position in the response organization and for each role player. Since the intention of the training exercises is to create deliberate errors and obstacles for the controllers and evaluators to handle, the player guides set forth specific instructions to the responders and role players as to how to create these errors and obstacles. Each player guide contains a detailed synopsis of exercise play for that position and location, including instructions for making errors and scripts for deliberate miscommunications. In effect, the controller and evaluator trainees are informed of the nominal exercise scenario; but, the players are informed even better of the actual exercise scenario.

E. Additional Training Materials

Videos of past exercises at the site have proven useful to give participants some familiarity with the site and with what they will be expected to do during the exercises. Photos from previous courses likewise have helped participants prepare for their assignments.

As a training aid, the evaluator trainees are given a checklist of evaluator performance criteria to guide them in how to collect information during the exercises and how to document their findings after the exercises. Before the exercises, the trainees use this checklist to grade some good and bad sample exercise reports. After the exercises, the trainees use the checklist to guide the writing of their own reports and as the basis for discussion of their reports.

IV. EXERCISE PARTICIPANTS

The presentation of the practicum requires a large number of faculty and exercise participants as members of an extended instructional team. For instance, exercise players are required for the roles of:

- Incident Commander
- Incident Commander’s Communicator
- Fire Department
- Medical Team
- Health Physics Team
- Area Emergency Supervisor
- Victims
- Evacuees
- Mock Media
- Public Information Officer (PIO)
- Assistant PIO
- Public/Media Inquiry Staff
- TV News Reporters
- Crisis Manager
- Assistant Crisis Manager
- Hazard Analyst
- EOC Communicator
- Administrative Assistant

Course faculty serve as Exercise Director and Lead Controller in order to ensure that overall control of the exercise is well maintained. Additional faculty serve in a Facilitator capacity that is not normally present during exercises. The Facilitators act as a sort of “super-controller,” ready to intervene if action or inaction by the controller trainees threatens to throw the exercise off track.

Also, to ensure safe conduct of the exercises, a member of the facility’s actual security staff helps to monitor safety and security at the incident scene.

V. EXERCISE FACILITIES & EQUIPMENT

Even in their simplified form, the exercises involved five action locations around the site. With the cooperation of facility staff, the incident scene was set up in an available building on site. Preparation of the incident scene included devising and positioning simulated hazards, such as a smoke generator to represent a chemical release, or a vial of harmless powder to represent a spilled radioactive source. Other incident scene props included, for example, a wind sock to show exercise wind direction, a large tank to indicate...
the volume of chemical in a release, and appropriate placards for the simulated hazards.

With the cooperation of the facility’s Fire Department, the actual Fire Alarm Office (FAO) was used to receive the first report of the incident from a role player at the incident scene. Care was taken to ensure that FAO personnel knew of the exercise, and that this simulated alarm was isolated from actual emergency alarms on site.

A Control Cell housed the Exercise Director, the Lead Controller and a number of controller trainees. This facility was equipped with several phone lines, maps, and timeline charts. In addition, the Exercise Director and Facilitators at all locations were given cellular phones to provide an independent communication network.

An EOC was set up to depict response to the emergency by site management. In the first two pilot offerings, we were able to use the facility’s actual backup EOC in the exercises. Therefore, the facility was: already equipped with communications, reference books, and other items that would have been needed as props. This facility also housed computer equipment suitable for depicting the technical analysis of hazards.

A simulated EPC was set up in a large conference room. Phone and fax equipment were required, as were maps, briefing charts, etc. The EPC, EOC, and Control Cell were all equipped with videotape players and monitors, in order for the controller trainees to inject “live” news broadcasts at appropriate times.

VI. COORDINATION WITH HOST LOCATION

Successful accomplishment of these exercises required significant coordination with management and other personnel at the facility, and buy-in to the concept of the course by management. The facility’s Emergency Management Director, Radiological Assistance Program team leader, and Fire Chief were extremely helpful in advising the course developers during preparation of the mock CEMP and the exercise scenarios. They helped obtain permission to use the exercise facilities, assisted with identifying and obtaining the many role players required, and aided in getting the needed equipment.

Facility management helped in securing access clearances for course participants and permitting role players to devote the needed time to these activities. The course developers ensured that management was kept informed of the progress and conduct of the course. Also, in the interest of exercise safety, announcements of the exercises were publicized to all facility staff the week prior to each offering of the course.

VII. RESULTS OF PILOT OFFERINGS

Participants in the first two pilot offerings of the course came from DOE facilities nationwide. They were enthusiastic about the value of this concept of training. The practicum augmented the usual forms of controller and evaluator training—classroom courses and pre-exercise briefings—with actual practice in carrying out the controller and evaluator roles.

The controller trainees generally did a good job of handling the planned obstacles that were thrown in their path. Many times they did what had been emphasized in the classroom training: coordinate with the Lead Controller.

As in other emergency management exercises, some of the most memorable events during the exercises were unplanned, neither part of the nominal exercise scenarios nor of the scripts prepared for the players. For instance, in both pilot offerings, the exercises were interrupted at least once by actual emergencies placing priority demands on some exercise resources. Unplanned departures from the scenarios created the opportunity for some genuinely free play. For example, in one instance, a communicator inadvertently neglected to pass on a recommendation to activate the EOC; so, the players did not activate the EOC until the controller trainees corrected the error. Another time, a controller trainee mistakenly injected a protective action recommendation; and, another controller trainee delayed injecting scenario weather data, leaving the players to use actual weather data in their hazard analysis. In these instances, though the players knew what was supposed to have happened, they played along with the controllers’ erroneous injects so that the trainees could see the outcomes of their actions.

The evaluation of the exercises was less susceptible to such unscheduled events. But, there was still abundant training value. The evaluators had to observe and document the players’ planned errors. In the process, they learned how to gather exercise information and convert it into oral and written reports. Of course, since the players were only human (and not professional actors) it was not expected that they would follow their scripts perfectly. Indeed, there were a variety of unplanned player errors for the evaluators to document along with those that were scripted.

Feedback from participants at the end of each practicum indicated substantial benefit from the training. Many of the participants expressed a desire to present such training to others at their home facilities.

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