THE EFFICACY OF THE TABLE-TOP OR 'WHITE PAPER' APPROACH TO EMERGENCY RESPONSE PLANNING OF DRILLS AND EXERCISES IS EXAMINED FOR PROCESS IMPROVEMENT

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ABSTRACT

This paper examines the development of a set of procedures for the use by Radiological Assistance Program (RAP) Team, Region 6 with particular emphasis to the steps used and the feedback provided by peer review, external review, and exercise and drill critiques. This paper also presents a brief history of the RAP and recommends Total Quality Management techniques reduce the costs associated with procedure development.

INTRODUCTION

The U.S. Department of Energy (DOE) has sponsored a Radiological Assistance Program (RAP) since the late 1950s. The RAP is designed to make DOE resources available to other DOE facilities; state, tribal, local, and other governing agencies; private businesses; and individuals for the explicit purpose of assisting in the mitigation of radiological incidents.

DOE is obliged by the Atomic Energy Act of 1954, as amended, to provide resources through the Federal Radiological Emergency Response Plan (FRERP) (November 1985) in the event of a radiological incident. DOE has the responsibility to minimize hazards to the public involving any materials under DOE ownership and control, regardless of the magnitude of such a radiological incident. The RAP is implemented on a regional basis, and has planning bases for incremental response capabilities and regional coordination between states and DOE response elements.

Request for radiological assistance may come from either a DOE facility, Federal or state agencies, tribal officials, or from any private corporation or individual. Commonly, many of the requests are of a type that can be handled by a telephone call, a conference, a letter, a facsimile, or a memorandum. Other requests for assistance are of such a nature that they require the dispatch of a trained and equipped team of responders. Such requests could involve radioactive materials in severe accidents, fire, personal injuries, contamination, or possible threats to the general public requiring response upon special request, for example, by the governor of any state within the region. In responding to such incidents, the RAP teams are ready, trained, and equipped with radiation monitoring.
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instruments and related equipment necessary to assist in evaluating, containing, and controlling the hazard. The primary responsibility for incidents involving radioactive materials always remains with the party having custody of the radioactive materials. For transportation-related incidents involving DOE-owned radioactive materials custody by a private party does not negate DOE’s responsibilities as the owner. DOE assistance for non-DOE owned radioactive materials, is limited to technical advice, measurement, and other services as previously agreed or as coordinated in the course of a response with local authorities.

PROCEDURE DEVELOPMENT HISTORY

EG&G Rocky Flats, Inc. developed 18 procedures in 1992 to facilitate response activities—in particular, to transportation incidents. These procedures addressed specific components of anticipated response actions, especially those relating to TRUPACT shipments to the Waste Isolation Pilot Plant (WIPP). These procedures were developed largely by individual effort with table-top input of a few RAP team members in the absence of existing procedures or precedent.

Specifically, these draft procedures addressed team member qualifications; storage and inventory of equipment; response scene priority setting; victim assessment; air sampling; contamination containment for victims and the site; site assessment; site remediation; post-incident activities; soil sampling; water sampling; snow sampling; communications; public information officer activities; and the use of a RADaCO grab sampler. The source of input and comment resolution up to the finalization of these drafts was limited to on-site (EG&G Rocky Flats, Inc. staff) RAP team members, within the Emergency Preparedness and Radiological Engineering organizations. These procedures were later forwarded off-site for review. The reviewing DOE and DOE contractor staff (principally Idaho National Engineering Laboratory (INEL) in Idaho Falls, Idaho, and Rust Geotech, Inc., in Grand Junction, Colorado) found these procedures too detailed and scenario-specific. This staff was tasked to develop more general guidance from these draft procedures, resulting in the final product: "Region 6 RAP Team Procedures."

These procedures directed the RAP Teams in the areas of: Training and Exercise, Roles and Responsibilities, Notification and Communications, Incident Site Assessment, Surveying and Reporting of Data, Event Classification, Close-Out, and Post-Incident Activities.

DRILLS AND EXERCISES

The U.S DOE Radiological Assistance Program Plan, dated April 8, 1993, requires that each RAP member participate in at least one major exercise annually. The Rocky Flats Environmental Technology Site (RFETS) RAP Team has participated in several full scale exercises in the last five years.

A WIPP Transportation Emergency Exercise (WIPPTREX 93-1) was conducted in Laramie, Wyoming, on April 14, 1993. WIPPTREX 93-1 provided a means to validate the
adequacy of the plans and procedures as well as the capability and proficiency of the RFETS RAP Team to respond to a transportation accident involving a TRUPACT II waste shipment.


The RFETS RAP Team adequately demonstrated the ability to provide assistance and interface with state and local emergency response officials through the Incident Command System. Four areas of special concern were identified: (1) inadequate logistical support for an extended RAP Team deployment; (2) the unavailability of dedicated RAP response vehicles; (3) inadequate radiological survey techniques; and (4) inadequate use of personnel protective equipment. These concerns indicate inadequate planning, procedures, and training. The evaluation identified one issue, 13 deficiencies, and 16 recommendations. The Rocky Flats Office Safety and Health Division team issued a report that evaluated eight major objectives that were to be demonstrated with 19 sub-elements. Five major objectives were fully demonstrated, and three were partially demonstrated. Of the sub-elements 15 were fully demonstrated, four were partially demonstrated. The following listed items are the 11 deficiencies (of the 13 noted above) that specifically involved the RAP Team:

- Inadequate logistical support for an extended RAP Team deployment
- Unavailability of dedicated RAP response vehicles
- Inadequate radiological survey techniques
- Inadequate use of personnel protective equipment
- The RFETS RAP Team deployed without direction from the Regional Response Coordinator (RRC)
- Inadequate training of the RAP Team Captain for his roles and responsibilities
- No notice of the Team's arrival to the incident scene communicated to the RRC
- Communication equipment inadequate for conversations between personnel at the entry and the control points
- Inadequate protocols were demonstrated for donning personnel-protective equipment and contamination control practices
- Lack of adequate response personnel by specialty, in particular (a Public Affairs Officer)
Inadequate TRUPACT-II training for the majority of the responding personnel

Many of these observations are not so much an indication of deficient procedures as an indication of inadequate attention to the details of training and familiarization of all involved personnel in the protocol, practice, care, and diligence in conducting a RAP Team response.

The evaluation report presented exercise objectives of the various functional areas of the response teams as well as a discussion of issues, deficiencies, and recommendations. An additional section, Comments/Observations, also discussed each functional area to provide comments and observations of the evaluators.

Functional areas presented include: Notification and Team Activation; Mobilization and Deployment; Communications; Interface with State, Local and Tribal Officials; Assessment; Media Relations; and Recovery.

Mitigative responses to findings, root causes, and recommended corrective actions arising from the WIPPTREX exercise were implemented.

The majority of findings pertaining to RAP personnel reflected their lack of familiarity with the philosophy of the Region 6 RAP Plan and Notification and Communication procedures. The Region 6 Teams are directed to perform their assigned roles and responsibilities in accordance with the directions put forth in plans and procedures. The program meets all the requirements and guidance in DOE Order 5530.3 and the Region 6, Radiological Assistance Program.

TOTAL QUALITY MANAGEMENT (TQM) PROCESS IMPROVEMENTS

Total Quality Management (TQM) Process Improvement techniques for developing RAP plans and procedures suggest that all parties brainstorm, discuss, and come to some agreement on the approaches to procedure and plan development. By doing this prior to the investment of a great deal of time preparing new plans and procedures within the existing infrastructure and documentation, cost savings may be realized. TQM Process Improvement techniques may be useful in preparing periodic updates of plans and procedures, as response technologies and priorities evolve. The capabilities of teleconferencing can be seen as a process improvement, saving both time and money by making staff travel to a common location unnecessary.

The creation of project management tools, e.g., a work-breakdown structure, a pert chart, a tree diagram, etc., during the brainstorming sessions will facilitate staff in the development of any new procedures and revisions. During the brainstorming phase, it is important to assure that as many members of the team as possible contribute their ideas, especially members performing auditing functions, planning functions, and drafting the procedures. Other staff who will be the primary responders should contribute. Key elements will be addressed. Following consensus by the team, a refinement developed by the team leader should form the framework for a work plan to implement the task of plan and procedure development or revision.
CONCLUSION

Individual effort and in-house review limited the depth and diversity of input during the procedure development process. Comprehensive input during the plan and procedure development process is more effective than only using multiple iterations of review, comment resolution, and reactions to critiques of exercises. Personnel from each pertinent functional area of responsibility (for example, planning, executing, and evaluating response activities) should be involved in the plan and procedure development process. Thus, the content of plans and procedures developed in this manner may better serve the RAP, resulting in more effective response planning, training, and execution documents. Since response activities involve personnel who are subject to considerable attrition and turn-over, it is not possible to involve all of the personnel who are likely to be involved in the process from the beginning of the planning phase to the end of an evaluation phase of an exercise or incident. In the past, procedure development was done through the implementation of findings into revised plans and procedures. The difference in approach is largely due to involving all staff in real time (i.e., the present) while being unable to involve all staff throughout the life of a single phase or evolution from planning in anticipation of an incident, through improvement based on the results findings after drills or real responses, i.e., during the initial planning stage. As a result, the TQM approach may improve but cannot perfect a process.

Faultless procedures will not assure perfect responses. To obtain the best possible results, the responding personnel must be familiar with procedure content and must have been well trained in their use in real-world conditions.

In an era of reduced budgets and scarce resources, appropriate attention needs to be given to maintaining sufficient staff and expertise to achieve the goals of the RAP. Procedure development will remain only one important component of that endeavor.

REFERENCES

DOE Order 5530.1, "Response to Accidents and Significant Incidents Involving Nuclear Accidents."

DOE Order 5530.3, "Radiological Assistance Program

DOE Region 6, Radiological Assistance Program Plan

50 FR 46542, Federal Radiological Emergency Response Plan (FRERP), November 8, 1985

Emergency Response and Recovery Roles and Responsibilities for TRUPACT-II Transportation Incidents

Radiological Assistance Team Procedures for TRUPACT-II Transportation Incidents