

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

October 15, 1993

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

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**FROM:** D. Thompson  
Senior Technical Specialist

**SUBJECT:** Report on Hanford Emergency Response Exercise "Fremont"

- 1. Purpose:** This report documents DNFSB staff observations made during the conduct of Emergency Preparedness Ingestion Exercise "Fremont." Exercise "Fremont" was conducted by the DOE Richland Operations Office (RL); the Westinghouse Hanford Company (WHC); the DOE Headquarters Emergency Operations Center (EOC); and the Federal Radiological Monitoring and Assessment Center (FRMAC) team from the DOE Nevada Operations Office, during the period September 22-23, 1993.
- 2. Summary:** Overall, the DNFSB observers consider the exercise to have been successful with regard to the activities conducted in and around the Richland area. To the extent the scenario called for them, realistic decisions based on the data available were made in timely fashion and transmitted to responsible agencies for implementation. Since no field work was actually performed during Day 1, it is not possible to reach any conclusions regarding the effectiveness of implementation of protective measures, nor were the responses of operating personnel to terminate the assumed release mechanism assessed, since those activities were also only simulated to have occurred prior to commencement of the exercise. Although there were deficiencies identified in the RL/WHC team's response to the emergency conditions postulated, these were minor and quite amenable to corrective action.

Day 2 play was arguably outside the scope of DNFSB interest, since it was aimed at the coordinated Federal agency response, not just DOE actions. However, limited comments are provided in Attachment A concerning the FRMAC participation, since the FRMAC response team was an element of the Nevada Operations Office, a DOE organization under DNFSB cognizance.

The response of the DOE Headquarters staff assigned to the EOC was less satisfactory. Actions that were taken were not commensurate with the problems encountered; i.e. the problem of two potentially contaminated commercial airliners did not receive prompt and urgent attention; no DOE Headquarters action was taken to ensure that the passengers were

tracked down before they could disperse. Communications, both inside and outside the EOC, were poor. At eight and one half hours into the event, the EOC possessed neither a plume map nor a source term. Many personnel within the EOC were not comfortable with the audio, visual and computer equipment supplied.

- 3. Background:** Exercise "Fremont," an emergency preparedness ingestion exercise designed primarily to test the actions of members of RL and the FRMAC response teams, was conducted during the period September 22-23, 1993 at the Hanford Site near Richland, Washington. Exercise "Fremont" was based on a simulated failure of a hypothetical waste storage processing facility in the 200 area of the Hanford site, at approximately 2:00 am, September 22, 1993.

Responses of on-site operating and emergency response organizations were simulated to have occurred about six hours prior to the start of the exercise, with the initial conditions of the exercise established by the simulated change of shifts at the RL Emergency Control Center (ECC) in the Federal Building in downtown Richland. The oncoming shift of response workers included the Manager of the Richland Operations Office, Mr. John Wagoner, as Emergency Director; the President of WHC, Mr. Tom Anderson, as the Director of Contractor Operations; and many of the people normally reporting directly to these senior managers.

Approximately eighty members of the WHC staff were assigned as role players in and around Richland as part of Exercise "Fremont", with an additional fifty local controllers and umpires, as well as a varying, but always significant, number of non-participating observers.

All field activities during Day 1 were simulated, including both on-site response to arrest the release and monitor the plume, and the off-site monitoring activities of WHC, DOE and local and State monitoring agencies.

Day 2 was a full-scale response of the FRMAC assigned to the DOE Nevada Operations Office, responding in accordance with the Federal Radiological Emergency Response Plan (FRERP). This effort involved upwards of 200 highly skilled people, large amounts of very specialized monitoring and communications equipment and extensive field work collecting real samples of soil, water and desert vegetation; simulation of surveying, counting and analyzing the samples; compiling the (simulated) results of sample surveys, assessing the resulting data; and reaching protective action decisions based on those assessments.

As a part of the scenario postulated for Exercise "Fremont", the EOC at DOE Headquarters was also activated for Day 1 and for simulated Day 3; appropriate staff members from EM were called upon to respond.

Observers from the DNFSB staff utilized the Federal Emergency Management Agency (FEMA) evaluation methodology set forth in FEMA-REP-15, "Radiological Emergency

Preparedness Exercise Evaluation Methodology", dated September 1991, and selected evaluation forms from FEMA-REP-15. The results of these evaluations are set forth in Attachment A.

#### **4. Discussion/Observations:**

Ten subject areas, listed below, were evaluated by DNFSB observers during this exercise. All were deemed satisfactory, although some minor deficiencies were noted in some subject areas. The nature and extent of those deficiencies are set forth in Attachment A.

The adequacy of the following subjects was evaluated:

- Facilities - Equipment, Displays and Work Environment
- Direction and Control
- Communications
- Plume Dose Projection
- Plume Protective Action Decision Making
- Public Instructions and Emergency Information
- Emergency Information - Media
- Supplementary Assistance (Federal/Other)
- Post-Emergency Sampling
- Ingestion Exposure Pathway - Dose Projection and Protective Action Decision Making

#### **5. Future Staff Actions:**

The staff will monitor the conduct of future emergency preparedness exercises.

## ATTACHMENT A

### Objective 1 - Facilities, Equipment, Displays, and Work Environment

Demonstrate the adequacy of facilities, equipment, displays and other materials to support emergency operations.

#### Day 1:

#### Richland

The RL ECC is located in the basement of the Federal Building, in Richland, Washington. It is furnished and equipped with appropriate furniture, communications equipment, and supplies for prompt activation when called for. Access is controlled by a key card system, in addition to the normal security force controls exercised for the building. As it presently stands, the ECC is adequate, but the layout is not optimum. Modifications to provide more space for the senior management team and a better arrangement of the support teams are funded and planned for early completion.

Extensive and effective use was made of teleconferencing and public address capabilities built into the commercial telephone system installed in the ECC and of electronic white boards installed in the several functional work areas of the ECC.

#### Headquarters

The DOE Headquarters EOC is located in the basement of the Forrestal Building in Washington, DC. It has recently been relocated and upgraded, and is an improvement over its predecessor. It is furnished and equipped with appropriate furniture, communications equipment, computer systems, audio-visual systems, and adequate supplies. The area is divided into at least ten team rooms that are interconnected via the audio-visual system. The team rooms surround the executive team room. The executive team room has enhanced audio-visual systems covering an entire wall of the room. The executive team room is the gathering point for senior DOE management (Assistant Secretaries and above) for status briefings on an incident.

The key to effective management and utilization of the EOC lies in the ability to effectively use the audio-visual systems, both within and external to the facility. Since not all systems were fully operational and the EOC staff was not fully familiar with all the communications and computing capabilities of the equipment available, effective and timely communications with RL were not maintained.

At the Headquarters EOC, radiological information about the injured/lost individuals and the plume from the event were at best, sketchy and fragmented. At eight and a half hours into the event, the EOC did not possess a plume map nor a source term. Both pieces of information would have proven useful in evaluating potential effects on the commercial and private planes that might have flown through the plume or on the operating commercial power plant located

down wind. It is important that the EOC have the capability of seeing or generating the same sort of radiological estimates that the field has. Although the capability to generate these estimates exists at the EOC, the staff was not aware of how to use it.

**Day 2:**

### **Richland**

The FRMAC team from the DOE Nevada Operations Office responded to the RL Safety Director's simulated request for assistance. The FRMAC set up in the Naval Reserve Center near the Richland airfield involved nearly 200 people and a full complement of field monitoring and counting equipment, communications and ADP gear, as well as sophisticated video links and presentation capabilities. Administrative support was provided by the Richland Operations Office and the local Naval Reserve Unit. Transportation for field monitoring teams and for administrative uses of the FRMAC team was obtained from local car rental agencies. Equipment and facilities were well organized and were used effectively.

### **Headquarters**

Day 2 activities were not evaluated at DOE Headquarters.

## Objective 2 - Direction and Control

Demonstrate the capability to direct and control emergency operations.

### Day 1:

#### Richland

The Emergency Director in the ECC was Mr. John Wagoner, Manager of RL, who provided solid leadership of activities of the RL/WHC response team. He was assisted directly by a management team of twelve people on the Emergency Action and Coordinating Team (EACT), including many of his own senior staff; and by Mr. Tom Anderson, President of WHC and several of his staff. In addition, representatives of the neighboring local jurisdictions and the State of Washington were part of the management team. This large contingent made for rather cramped accommodations in the space set aside for the EACT, especially with the added observers, controllers, and proctors present for the exercise.

With one exception - when Unified Dose Assessment Center (UDAC) personnel made a recommendation for protective action directly to County representatives present in the UDAC without obtaining the endorsement of the EACT specified in approved emergency response procedures - the EACT management team provided firm and effective direction and control of the parts of the overall response effort for which they were responsible.

#### Headquarters

For this exercise, the Headquarters EOC was in a reactive mode for the first day of the exercise. Typically, the information the EOC had was either old or did not require action. Repeated attempts by responsible EM participants to obtain information on the injured/lost individuals and the source term/plume did not yield results in a timely fashion. Headquarters cannot be so cut off from timely information and still be effective.

When timely information was available (the situation of the possibility of two commercial and one private airplane having flown through the plume), it was not acted upon with vigor. Although the FAA was notified, it was requested to locate the planes and not necessarily the passengers. Contingency plans as to what to do with the planes and passengers were not evident. The lack of an EH representative in the EOC was most apparent during the airplane evolution. A general comment was made by several knowledgeable EOC personnel as to the lack of EH participation in emergency exercises.

Day 2:

### **Richland**

The Director of the FRMAC was Mr. Steve Ronshaugen, Director of the Emergency Management Division of the DOE Nevada Operations Office. The organization and prearranged relationships among the large staff of the FRMAC was clear from the outset of their participation; they were obviously well-rehearsed in their roles and functions. The various functional centers went about their activities in a business-like and effective manner. The hubbub surrounding concurrent activities conducted in an acoustically poor facility created an impression of chaos, but members of each functional group were aware of their sphere of responsibility, had practiced their assigned functions many times, and were performing them as though they were unaware of any other competing activities.

As an individual, the FRMAC Director was clearly unfazed by the noise and confusion in the armory; he provided calm and effective leadership of his immediate response staff, and took pains to keep the entire staff of the full FRMAC team apprised of the status of the developing scenario as new facts became known. When the postulated initial conditions for FRMAC play were inconsistent with those conditions passed on to him by the previous day's players, he took the time to meet with all involved parties to ensure that the start of the FRMAC portion of the exercise were clear and understood by all.

His decisions regarding recommendations for protective measures were made based on input from all involved parties and promptly passed on to local and State decision makers.

### **Headquarters**

Day 2 activities were not evaluated at DOE Headquarters.

### Objective 3 - Communications

Demonstrate the capability to communicate with all appropriate emergency personnel at facilities and in the field.

#### Day 1:

##### Richland

Communications capability in the ECC relied extensively on commercial telephone facilities. There was only limited use of radios, due to the simulation of all field activities. Within the response center, teleconferencing was used effectively to communicate among various elements of the emergency response organization, and computer links between the UDAC and the Field Team Coordinating Center (FTCC) were used effectively to communicate sample data and plume and footprint information.

In each of the team rooms in the ECC, electronic white boards were used as status boards, which, for the most part, were updated promptly. In a few cases; e.g. when information concerning a private aircraft intruding into the air space over the accident site was initially posted on the status board in the EACT room, players were somewhat slow in observing the new information (it took almost fifteen minutes for anyone on the EACT to notice the intruding aircraft information).

Hard copy message pads were used to archive critical incoming and intrastaff questions and answers. Throughout the exercise, numerous messages of this type originated from the DOE EOC in the Forrestal Building in Washington, DC. These inquiries flowed promptly into the EACT room, where, as a standard practice, they were delivered to the Deputy Emergency Director for his processing. The Emergency Director had obviously made responding to DOE Headquarters a responsibility of his deputy, while the Director concentrated on handling the local situation. This quiet diversion of DOE EOC questions was so effective that it was not clear to observers in the ECC whether or not Headquarters questions were ever answered satisfactorily. Based on concurrent DNFSB staff observations in the Headquarters EOC (discussed below), it is apparent in retrospect that they were not.

##### Headquarters

Communications between the Headquarters EOC and Richland could not be described as timely and effective. The lack of timely information in the Headquarters EOC on injured/lost individuals, source term, projected plume, and recommended protective actions was evident. What is not so evident is where the problem lies. The appropriate questions were asked, but satisfactory responses were not forthcoming.

#### Day 2:



## Richland

The extensive communications capabilities of the FRMAC team functioned effectively throughout Day 2. Particularly impressive were the still video imaging capability linking not only interior and exterior stations of the FRMAC proper, but also the EOC's of Washington and Oregon States, as well as local jurisdiction response centers. The digital imaging of isopleths and field monitoring data on large screen video monitors and the rapid conversion of digitally stored data into large dimension hard copy plots was also impressive.

Every field monitoring team was in constant radio communication with the FRMAC Manager for Monitoring and Analysis, permitting rapid adjustments to monitoring patterns and samples, as well as alerting the receiving teams to estimated times of arrival of monitoring teams as they returned from the field.

Communications among staff elements within the FRMAC proper were crisp and concise. They were confirmed in hard copy promptly, and status boards were kept up to date and clear throughout the exercise. The poor acoustics of the armory made the background noise level intrusive (not unusual for this type of makeshift emergency response facility), but the exercise participants coped with the intrusion very well.

## Headquarters

Day 2 activities were not evaluated at DOE Headquarters.

#### Objective 4 - Plume Dose Projection

Demonstrate the capability to develop dose projections and protective action recommendations regarding evacuation and sheltering.

#### Day 1:

#### Richland

Initial conditions set out for this exercise specified that evacuation and take cover protective actions for on-site personnel preceded play. The UDAC and FTCC staffs developed a timely initial survey plan based on available meteorological and source term data and simulated dispatch of field survey teams. As data from the field survey teams were fed to the FTCC and UDAC staffs by the controllers, both manual and computer model calculations of plume path and projected dose were made by UDAC participants. Based on these calculations, the UDAC staff correctly determined that the principal hazard was one of ingestion, with lesser risk from immersion in the passing plume. The UDAC staff prepared suitable, and generally timely, briefings for the EACT, including suggested Protective Action Recommendations (PAR's).

In at least one instance, the physical proximity and working relationship between the DOE/WHC players and the local jurisdiction representatives in the UDAC led to a failure to follow established procedure for making recommendations to the Counties involved. Members of the UDAC staff are supposed to prepare suggestions for PAR's for decision by the Emergency Director, in consultation with the EACT members. At approximately 9:15 am on Day 1, unidentified UDAC staff members recommended to the local County representatives that the area covered by a Take Cover PAR be increased beyond that previously recommended formally in the initial conditions of the exercise.

Although the County representative in the UDAC passed along that recommendation to the County EOC, no action was taken by the responsible County Commissioners, because that information was in conflict with the earlier formal recommendation simulated to have been received from the Emergency Director. However, no clarification of the conflict was sought at the time. The conflict was disclosed shortly after 11:00 am. when the UDAC suggested to the EACT during a routine update briefing that the Take Cover area "be reduced to the original boundaries" included in the formal PAR originally spelled out in the exercise starting conditions. The resulting confusion continued for almost three hours before the situation was satisfactorily resolved.

Through most of Day 1, the EACT was frustrated in its desire for more timely presentation of plume isopleths. The UDAC seemed to have difficulty providing hard copy plots in time frames that the EACT desired, repeatedly presenting update briefings to the EACT without prior plots. This resulted in too much UDAC arm waving and pointing to vaguely defined boundaries on maps that were unreadable to most of the EACT team.

Except for these minor shortcomings, the UDAC and FTCC both operated as planned and provided realistic and (for the most part) timely suggestions for PAR's for EACT and Emergency Director decisions. Appropriate computer models were used and the resulting suggested PAR's were consistent with the scenario presented.

### Headquarters

The Headquarters EOC appeared to be totally dependent upon the site to provide dose projections and protective action recommendations. Although computers were available in the EOC that were supposed to have projection capability, no one was familiar with their operation. As a result, it was more than eight and one half hours into the event before a dose projection map was obtained. Had Headquarters' assistance been necessary to mitigate the consequences of an accident, this delay would have been unacceptable. The RL/WHC responders did not seek input or verification from the Headquarters EOC on protective action recommendations. It is unclear whether this reflects a deficiency in the RL/WHC response or simply a lack of RLO/WHC confidence in Headquarters ability to provide this type of support.

Day 2:

### Richland

The start of Day 2 was delayed slightly when some disagreement arose concerning the adequacy of the break message presented by the controllers to represent the conditions determined by the UDAC players from Day 1. The FRMAC Director led the conference to address the conflict to a satisfactory resolution, with only a short delay in the start of Day 2 play. He notified the entire FRMAC team of the nature of the resolution through use of the public address capability built into the telephone system, and restored order from the initial chaos.

From that point onward, Day 2 proceeded smoothly. Field survey teams were assigned sampling and monitoring locations and tasks and dispatched in a timely fashion. Real samples were taken, and simulated survey readings were supplied by controllers who accompanied the teams. Upon their return from the field the survey teams were appropriately monitored for contamination and samples were collected and logged coherently for (simulated) counting and analysis.

As field data were received, isodose lines were prepared in timely fashion and provided to the FRMAC Director, who provided PAR's to State and local representatives for their decisions. The analysis and evaluation functions correctly led to PAR's concerning relocation of personnel and the confiscation of crops. Both State and County representatives translated the PAR's they were provided into clear and understandable geopolitical boundaries.

In general, participation by FRMAC players was active and enthusiastic. For example, Radiation Protection Technicians assigned to the monitoring station for returning field survey teams were conscientious in requiring both observers and other participants to observe hot zone boundary restrictions. However, on at least two occasions, an RPT was observed to step over

the rope marking the hot zone boundary into the clean zone, in order to more conveniently survey the soles of the shoes of returning field teams. Except for these minor lapses, however, play at that station was commendably realistic.

Similarly, players in the Monitoring and Analysis and the Evaluation and Assessment Divisions, as well as those players providing video, communications and administrative support were fully "in the spirit" of the exercise and played their roles in a laudable, businesslike fashion.

#### **Headquarters**

Day 2 activities were not evaluated at DOE Headquarters.

## Objective 5 - Plume Protective Action Decision Making

Demonstrate the capability to make timely and appropriate protective action decisions (PAD).

### Day 1:

#### Richland

The responsible decision maker, with respect to PAR's, was the Emergency Director, Mr. John Wagoner, the Manager of the Richland Operations Office. The scenario for Exercise "Fremont" included prestart conditions that had implemented evacuation and take cover actions for on-site affected personnel. Starting conditions also set forth prevailing meteorology and presumed source term. Based on these starting conditions, the UDAC staff suggested to the Emergency Director that Take Cover protective action be recommended to local jurisdictions responsible for off-site public protection. These were implemented as starting conditions for the exercise. Evacuation of off-site public was never suggested as a protective measure.

As simulated field data were provided by controllers to the UDAC staff, new source term estimates, isopleths and projected doses were prepared and used to confirm and/or modify earlier PAR's. In one instance, discussed more fully under Objective 4 above, a suggested PAR was improperly provided directly to County representatives working in the UDAC, bypassing the EACT.

When the Emergency Director became aware of the inappropriate bypassing of the EACT by the UDAC staff, he initiated prompt corrective action. However, considerable time was required to thoroughly clarify the confusion that had resulted.

In reaching his decisions regarding PAR's the Emergency Director solicited and carefully considered the views of all members of the EACT, with greatest emphasis apparently placed on the views of the WHC Scientific Advisor, the Senior Contractor's Representative, and the RL Safety Director. When decisions were reached, the Emergency Director communicated them to the entire staff, using the public address capability built into the telephone system. He was careful to reiterate to representatives of the local jurisdictions that while he was responsible for deciding what to recommend to them regarding protective actions, it was their responsibility to decide whether or not to accept and implement those PAR's. Decisions by the local jurisdictions were only simulated in this exercise.

Early in the afternoon, the EACT was informed that Delta airlines had identified two aircraft that might have flown through the plume. One of the two planes, with its crew and passengers had been placed in quarantine in Salt Lake City; the other in Boise, Idaho. The EACT quickly recognized the potential for not only contaminated aircraft, but also the possibility of widespread contamination of passengers and facilities if: (1) the aircraft were actually contaminated; and (2) they were permitted to continue on their scheduled flights.

The Emergency Director first directed that DOE Headquarters EOC be contacted to establish contact with the FAA at the agency level. He quickly cancelled that instruction and directed the EACT Security Officer to contact the regional FAA office and the Delta Airlines Operations Office directly to confirm the status of the two affected aircraft, and to recommend immediate surveys of both aircraft to determine the extent of any possible contamination of engine cowlings, leading edges of wings and compartment air intakes.

The EACT Security Director's inquiries disclosed that radiation surveys were already underway on both aircraft, and in remarkably short order, both were determined to be free of contamination and were released to continue on their flights. Quarantines of the passengers were lifted promptly and the issue was satisfactorily resolved.

As Day 1 neared its end, the EACT gave consideration to the question of reducing the category of the Emergency from its initial General Emergency classification. After extensive discussion among the EACT members, the Emergency Director decided to change that classification to one of Site Area Emergency, recognizing that under the prevailing scenario, off-site conditions indicated the need for temporary relocation of certain elements of the public and the need for definition of boundaries for agricultural product controls. When that decision was made, play for Day 1 concluded.

### Headquarters

Previous discussions have spelled out the difficulties encountered in the DOE Headquarters EOC in the area of dose projections, protective action recommendations, the potentially contaminated airlines and the passengers. Although these may all have been handled competently by the field, headquarters was basically in the dark on these items for an unreasonably long time.

Day 2:

### Richland

On Day 2, the responsible decision-maker regarding PAR's was the Director of the FRMAC, Mr. Steve Ronshaugen, Director of the Emergency Management Division of the DOE Nevada Operations Office. He took full advantage of the entire FRMAC staff capability to weigh the options available to him and involved his immediate management team in reaching his decisions regarding PAR's. As had Mr. Wagoner on Day 1, Mr. Ronshaugen emphasized to representatives of the states and local jurisdictions that any decision to accept and implement PAR's provided to them by FRMAC was theirs to make, not his.

As field data was fed to the FRMAC analysts and evaluators, their suggestions to the FRMAC Director for possible PAR's were reasoned and consistent with the data provided by the controllers. Once the FRMAC Director had made his decision regarding PAR's, any further decisions by State and/or local authorities were only simulated in this exercise. Thus, observers were unable to determine the timeliness or efficacy of any of those decisions.

## Headquarters

Day 2 activities were not evaluated at DOE Headquarters.

## Objective 6 - Public Instructions and Emergency Information

Demonstrate the capability to coordinate the formulation and dissemination of accurate information and instructions to the public.

### Day 1:

#### Richland

Throughout Exercise "Fremont", the interaction of the participants with the public and the media was simulated. It was apparent that the "real" local press was aware that the exercise was ongoing, but their interest was quite casual. Role players were assigned to act as members of the press and of hostile special interest groups. These players were very vigorous and aggressive in their roles but were not very successful in disrupting press conferences nor in seeking confrontation with the exercise participants.

One of the means of communicating with the public was the simulated use of the Emergency Broadcast System (EBS). Simulated messages on the EBS included repeated cautions for identified groups in specified locations to stay indoors, with associated cautionary actions; information concerning where information could be obtained regarding the validity of rumors; information regarding school closings and, in later stages of the exercise, where evacuees were to relocate.

Messages for the public were prepared jointly by the RL Public Affairs Officer (PAO) and representatives of local jurisdictions; they were issued as releases of the local authorities. A log of such simulated releases was maintained by both the RL PAO and the JIC staff.

#### Headquarters

At the Headquarters EOC, preparations for a press briefing were observed. It was clear from two status meetings that not enough accurate information was available to hold a press briefing. The EOC was not getting information in a timely fashion.

### Day 2:

#### Richland

Interactions with the public and press were not observed during Day 2, due to conflict with other ongoing activities in the FRMAC.

#### Headquarters

Day 2 activities were not evaluated at DOE Headquarters.



## Objective 7 - Emergency Information - Media

Demonstrate the capability to coordinate the development and dissemination of clear, accurate, and timely information to the news media.

### Day 1:

#### Richland

The EACT PAO was very effective in responding to simulated media inquiries and to screening crank calls and obviously erroneous rumors. He did not attempt to draft press releases personally, but instead provided key facts to his support staff and then edited their work prior to release. Press releases were generally accurate, clear, straightforward and consistent (one exception is noted below and discussed further under Objective 4 above). The PAO worked closely with both the EACT staff and the staff assigned to the Joint Information Center, which was established in the Federal Building, but well away from the ECC, in the Hanford Science Center.

Press conferences were held in the auditorium of the Federal Building. They were scheduled frequently, but somewhat irregularly (as is expected during emergencies), throughout Day 1. These press conferences required repeated appearances by knowledgeable participants, including, on at least one occasion, the Emergency Director personally. Most press conferences involved mid-level RL managers, however, in addition to a variety of State and local representatives. For the most part, these individuals performed very well, responding to hostile questioning coolly, and volunteering to clarify their statements in further discussions outside the press conference, where that was appropriate.

The initial press conference included statements by the representative of the two neighboring local counties that the area covered by "Take Cover" as a protective action was larger than the area actually designated by the Emergency Director in his PAR. None of the role players acting as reporters at that press conference picked up on the differences between what that County representative was saying and what had been actually specified in the earlier "Take Cover" instruction issued to the public.

The Emergency Director, who participated personally in that particular press conference, remained very cool when this situation occurred and gave no indication of his anxiety during the session. Upon his return to the ECC, however, he initiated prompt action to obtain the reasons for the discrepancy. This matter is discussed more fully under Objective 4 above.

#### Headquarters

Not observed at DOE Headquarters.

Day 2:

**Richland**

Interactions with the press during Day 2 were not observed, due to conflicts with other ongoing activities in the FRMAC.

**Headquarters**

Not observed.

## Objective 8 - Supplementary Assistance (Federal/Other)

Demonstrate the capability to identify the need for external assistance and to request assistance from other Federal or other support organizations.

### Day 1:

#### Richland

As part of the initial conditions of Exercise "Fremont," the scenario provided that the RL Safety Director had already requested assistance under the FRERP, and that the FRMAC Team Advance Party was enroute for a mid-morning status briefing in preparation for the establishment of full-blown FRMAC involvement upon arrival and set-up of the FRMAC. In accordance with the provisions of the FRERP, representatives of all the Federal agencies having cognizance over radiological emergencies was anticipated (and ultimately played).

Upon notification of the need to brief the FRMAC Advance Party, and of the scheduled time of the briefing, the Emergency Director arranged for the EACT Safety Director to be relieved of his EACT duties by a knowledgeable member of his staff, in order to permit the Safety Director to handle the FRMAC Advance Party briefing. The transition was handled smoothly, without perturbing EACT operations in any way. The briefing of the FRMAC Advance Party was impressive, according to the DNFSB Resident Representative, who attended it. Both the briefers and the FRMAC Advance Party members played their roles with integrity and enthusiasm, creating an atmosphere of seriousness and realism.

The DOE Richland Operations Office served as Lead Federal Agency in the FRMAC response, as well as the agency initially requesting assistance. Following the FRMAC Advance Party briefing, FRMAC representatives began the transition process by: (1) providing knowledgeable players in the UDAC to familiarize themselves with the evolution of the plume and footprint; and (2) by initiating all the logistical arrangements for the establishment of the FRMAC. These arrangements were simulated, since the exercise had, of course, been planned well in advance of the exercise date. The time compression arising from these simulations injected an air of unreality to the exercise, since their completion in real time would have required much longer, and would probably have been complicated by more administrative restrictions, than the scenario provided for.

During Day 1 play, on those occasions where agency-level assistance might have been reasonably requested of the DOE Headquarters EOC, it was not clear that the EACT members believed that they could rely on DOE Headquarters EOC performance; e.g. the rescission of an initial request for Headquarters EOC to obtain FAA assistance in the matter of the Delta airliners discussed more fully under Objective 5 above.

When the Department of Defense interposed administrative limitations concerning compensation for costs of using military aircraft to transport injured workers, the EACT response was to draw

back from DOE Headquarters assistance and to (simulate) making those arrangements regionally, rather than at the national level. (Incidentally, on the particular matter of transporting the victims to other hospitals, it was not clear to observers why consideration wasn't given to requesting assistance of the Governor of Washington in activating elements of the Air and Army National Guards for assistance that might have been more expeditiously provided.) The simulated provision of the needed support was suspiciously quick, leading the DNFSB observer to conclude that the controller responding to the EACT Security Director's request might have been tired and anxious for the exercise to end.

### **Headquarters**

The Headquarters EOC was observed interacting with two federal agencies. In one case, the NRC requested the extent of possible interactions with the plume and the commercial nuclear power plant on the Hanford reservation. They were told there should be no problems encountered at the commercial plant. Documents at the Headquarters EOC showed the power plant just over (10.4 miles) the ten mile evacuation zone. Later plume data showed the plume passing over the power plant.

The other case involved contact with the FAA over the scheduled airlines which may have passed through the plume. The request from the Headquarters EOC involved a request for FAA help in tracking down the aircraft - not the passengers. These federal interactions cannot be described as helpful.

**Day 2:**

### **Richland**

Requests for additional assistance from outside agencies were not observed during Day 2 play.

### **Headquarters**

Not observed on day 2 of play.

## Objective 9 - Post-Emergency Sampling

Demonstrate the use of equipment and procedures for the collection and transportation of samples from areas that received deposition from the airborne plume.

### **Day 1:**

#### **Richland**

Exercise "Fremont" did not include any actual field sampling during Day 1 play.

#### **Headquarters**

Not observed from Headquarters EOC.

### **Day 2:**

#### **Richland**

The FRMAC team included the capability to conduct extensive field surveys and sample collection efforts. Each team was well equipped with tools for sample collection, containers, labels, writing materials, radios, and low-range beta-gamma survey instrumentation. Equipment lists provided to the teams served as a basis for determining the completeness of what was furnished to each team, and the teams used the lists to verify that they had what they needed before they left the FRMAC.

Team members were observed to perform battery checks on survey equipment and operability tests using check sources before departure. All teams were provided topographical maps covering the areas in which they were to survey and/or gather samples. Controllers were assigned to accompany each field team. Field activities of the teams was not observed by the DNFSB observers.

Objective 10 - Ingestion Exposure Pathway - Dose Projection and Protective Action Decision Making

Demonstrate the capability to implement protective actions for the ingestion exposure pathway.

**Day 1:**

**Richland**

Plume projections were modelled by the UDAC staff early on Day 1 based on assumed source term and exercise meteorology. These projections were essentially confirmed by serpentine aerial monitoring surveys simulated to have been performed by Washington State by shortly after noon. As the day progressed, simulated results of field monitoring efforts fed into the FTCC and UDAC by the controllers remained consistent with the UDAC projections. It became clear to the UDAC team early on that the principal exposure pathway for the off-site public would become ingestion of contaminated foodstuffs, with a transient immersion hazard during passage of the plume and a lingering possibility of later reentrainment of contamination deposited on the surface.

Based on the available data, the UDAC staff developed dose projections, established isodose plots and suggested changes to the boundaries of PAR's (see problem area identified under Objective 2 above). When Protective Action Guides (PAG's) were exceeded by the doses projected by the UDAC, the staff proposed (simulated) agricultural controls and limited (simulated) temporary relocation of limited segments of the off-site public as ongoing PAR's to extend beyond the time limits of exercise play. (This was the mechanism used by the controllers to establish hand-off conditions to end Day 1 play and to set starting conditions for Day 2 play.)

Near the end of Day 1, after the EACT team had concluded that it was reasonable to downgrade the classification of the emergency to that of Site Area Emergency, the EACT recognized continuing need for PAR's for certain elements of the off-site public, as well as the paradox of increasing the stringency of those requirements, even as the seriousness of the on-site emergency was abating. The Emergency Director took special pains to communicate clearly to the County and State representatives the basis for continuing controls over the off-site public, and directed the UDAC staff to develop unequivocal descriptions of those conditions and the boundaries applying to each of them, in preparation for handing off responsibility for off-site activities to the FRMAC Director as a condition for conclusion of Day 1 play.

**Headquarters**

Consideration of the protective actions to be taken for an ingestion pathway made it appropriate for an expert in such matters (i.e., an EH representative) to be on the management team. There was none present. Discussions with Headquarters EOC personnel revealed that EH personnel do not participate in emergency exercises.

Day 2:

### Richland

Commencement of play for Day 2 was delayed by an apparent conflict between data provided by the UDAC staff from Day 1 and that provided by controllers as the Day 2 starting conditions. The FRMAC Director quickly arranged a conference of all affected parties during which the conflict was satisfactorily resolved, permitting the exercise to proceed with only a small change in the scenario. Immediately upon the conclusion of that conference, the FRMAC Director notified the entire FRMAC team, through the public address system, of the nature of the resolution.

The conditions prevailing at the end of Day 1 entailed imposition of agricultural controls over selected products and temporary relocation of limited portions of the off-site public, in clearly defined geographic areas set forth on plots provided by the UDAC staff from Day 1 play. Shortly after Day 2 play commenced, controllers provided results of (simulated) aerial monitoring survey conducted by Oregon State just south of the Columbia River boundary with the State of Washington, showing an area of moderately elevated radiation levels in and around the town of Hermiston, OR.

Based on these data, the FRMAC Manager for Monitoring and Analysis, in consultation with the FRMAC Manager for Evaluation and Assessment and the FRMAC Director, developed a field monitoring plan and assigned field monitoring teams to conduct field surveys and to collect samples of water, soil and vegetation to verify or adjust the boundaries provided as starting conditions.

The field monitoring teams were briefed, equipped and dispatched expeditiously. None of the field monitoring teams were observed in the field by DNFSB observers, but their return to the FRMAC was observed, including procedures for surveys of vehicles and personnel, as well as for receipt, logging and initial processing of collected samples. With the exception of relatively minor deficiencies discussed more fully under Objective 4 above, these activities were conducted smoothly and without noteworthy flaws.

Simulated raw data from sample analysis was provided to the staff of the Manager for Evaluation and Assessment, who prepared for consideration by the FRMAC Director proposed changes to the agricultural controls and relocation actions in effect as starting points for Day 2 play. As the day progressed, and the boundaries for the agricultural control zone became more clearly defined, the FRMAC Director and his staff worked directly with the State representatives and the Lead Federal Agency (LFA), DOE, in developing and articulating adjustments in the PAR's. In the case of the relocation PAR, by the end of Day 2 it was clear that return of the evacuees would soon be feasible, and reentry plans were developed as part of the exercise. With regard to the agricultural controls PAR, the scenario called for continuation of the embargo/quarantine past the end of exercise play.

## Headquarters

Day 2 activities were not evaluated at DOE Headquarters.