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TRANSPORTATION RADIOLOGICAL EMERGENCY PREPAREDNESS

STAR 95 EXERCISE FINAL REPORT

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DISCLAIMER

DEDICATION

TO KURT HANF

Friend, Colleague, and Humorist
He lent us his talent
But he left this world too soon

* * * * *

AND A SPECIAL THANKS:

TO DICK HALSAVER

Sent to us by DOE
He made it all possible
and
He helped us do it right

TRANSPORTATION RADIOLOGICAL EMERGENCY PREPAREDNESS PROGRAM EXERCISE STAR 95 FINAL REPORT

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TRANSPORTATION RADIOLOGICAL EMERGENCY PREPAREDNESS PROGRAM EXERCISE STAR 95

FINAL REPORT

I. INTRODUCTION

Emergency response for a transportation accident involving radiological materials, while not inherently difficult, presents a challenge for several reasons. These accidents, although they can occur anywhere, are rare. Also, although the health consequences are usually slight, accidents involving radioactive materials generally cause a great deal of concern, both for the emergency responders and the general public.

How can communities be prepared for an event that requires some technical knowledge, but is so rare that it will never occur in most areas, without expending an effort disproportionate to the actual risk? How can one appropriately deal with an event that may cause excessive public concern? These questions are at the heart of the preparedness issues this program addressed.

When a transportation accident occurs involving radioactive materials, the initial response is at the local level. At first, responders expect an ordinary transportation accident, but at some point they become aware that radioactive material may be present. What factors determine if and when they may seek more specialized assistance? Are they aware of the role of the State in protecting public health and the environment?

If local responders do not request assistance, when and how will State response organizations find out about the incident? If the State hears of an incident involving radioactive materials, from a source other than the local responders, how will the local responders react to the State's offer of assistance and their subsequent presence at the scene? How does the State determine if, and when, it is appropriate to request federal radiological assistance? How are federal resources integrated into the response?

Being prepared requires an initial response capability and an appreciation for the need for specialized assistance, how to obtain it, and how to integrate it into the local response under the Incident Command System at the scene.

The Transportation Emergency Preparedness Program was undertaken because of an interest at all levels of government: local, county, state and federal, in how responders should deal with and work together for a successful response; one that minimizes injury, property damage, and public concern. The Program was supported by a grant from the U.S. Department of Energy to the State of New York, for preparedness activities (planning, training, and awareness), and the design, conduct and evaluation of a transportation accident field exercise.

The overall goal of the Transportation Emergency Preparedness Program was to establish the framework for a coordinated response by all levels of government to a transportation accident involving radioactive material. The Program involved both preparedness activities and the development, conduct and evaluation of a field exercise in Saratoga County, New York.

The principal participants in the overall Program were the New York State Emergency Management Office, the Saratoga County Office of Emergency Services, Jonesville NY Fire Department, the New York State Department of Health, The New York State Department of Environmental Conservation and the U.S. Department of Energy.

This Report concentrates on the functional activities, lessons learned, recommendations, and action plans for improving preparedness and response to a transportation accident involving radioactive materials.

II. SCENARIO

In order to make the scenario realistic, without using an actual highway, the exercise was conducted in a vacant parking lot, that was set up with props, markings, vehicles, etc. Special diagrams and photographs of the highway simulated were given to the Incident Commander, so the responders could simulate the details of a real location.

In the exercise scenario, a van delivering 14 packages of radiopharmeceuticals and other medical sources to a local hospital was rear-ended near a busy intersection by a farm stake truck carrying pumpkins on the way to market during morning rush hour. The impact expelled several radioactive packages from the rear of the van and two boxes were run over by the farm truck, releasing solid Iridium-192 ribbon and sodium iodide solution with Iodine-131. The problem included an injured and contaminated driver; contamination of good Samaritans, the ground, drainage water, and farm produce. Downed electrical power lines and spilled motor fuel presented other problems for responders.

STAR 95 began with a call to 911, triggering the response by law enforcement, who, upon arrival, called the fire department and a private ambulance. The County Sheriff and State Police controlled traffic and access to the scene. Downed power lines required the assistance of the electric utility and the HAZMAT team was called in to deal with the radioactive and flammable materials. Fire Police provided accident site security.

Local responders confirmed the presence of radioactive contamination (simulated with small radioactive sources) with the type of State owned radiation instruments normally distributed to emergency services throughout the state. The fact that radiation was involved triggered a request for assistance to State Radiological Health officials. The HAZMAT team monitored the accident victim for radioactive contamination. The victim was then examined by emergency medical technicians and transported by ambulance to the hospital, where he was treated and decontaminated.

The Town Highway Department provided sand for shielding and the Town/County Highway officials, with the assistance of the State Department of Transportation considered highway re-routing options, and traffic control equipment and emergency road signs.

The Incident Commander made decisions on protective actions for those at the scene, nearby residents and businesses based upon the assessment of risk in their area. Special consideration was given to the nearby public school and a private day-care center.

Both real and simulated news reporters came to the scene to participate in the exercise. Some of the real media representatives who came were interested in covering the exercise itself as a news story. The responders and local officials conducted news briefings with the eventual assistance of state health and emergency management public information officers.

Radiological teams from the State Department of Health, State Department of Environmental Conservation and the U.S. Department of Energy Radiological Assistance Program responded to the scene to help identify and mitigate the problem. The State Department of Agriculture and Markets was contacted regarding disposition of the contaminated farm produce.

While emergency response was the primary "field" activity of concern, cleanup and recovery were dealt with in a special tabletop exercise held the morning after the response exercise. Issues discussed included: detailed monitoring and sampling activities, laboratory analysis, re-packaging and disposition of spilled radioisotopes, waste handling, decontamination and criteria for on-scene agency deactivation.

A critique was held immediately after the exercise, and in the following days with selected individuals and organizations. This report is based upon those meetings, videotape of the exercise and critique recorded by the U.S. Department of Energy, and written reports and observations of the controllers, who also served as evaluators.

III. WHAT WAS LEARNED?

As expected, many functions were handled well, and the exercise confirmed some current policies and procedures. Confirmed successful response actions and the desire to focus on areas that need improvement have both led to the recommendations and action plans found in Section V.

The eight significant findings identified from the preparedness program and the Saratoga Transportation Accident Response (STAR 95) Exercise are given below. These eight major findings probably apply generally to any transportation accident involving radioactive materials.

1. Response is primarily a local activity, and should be conducted under a formal incident command system, with state and federal assistance properly linked to local responders through the incident command system.

2. Radiological emergencies are most effectively handled as a hazardous materials incident requiring both hazardous materials and radiological response capabilities.

3. Technical assistance from the State Radiological Authority (New York State Department of Health) is needed on-scene as early as possible, with federal assistance requested in serious situations. Technical assistance would also be necessary from the New York State Department of Environmental Conservation if the release is significant and the surrounding environment contaminated.

4. Radiological response procedures should be incorporated within hazardous materials response plans.

5. Hazardous materials response teams should have several people trained and equipped for radiological response and mitigation, including a radiological monitoring capability.

6. More radiological responder training must be made available at the local and state level.

7. An on-scene public information capability is essential because of public and media interest in radioactive materials incidents.

8. The entire response to radiation accidents, from initial actions to cleanup and recovery, must be better coordinated.

IV. PREPAREDNESS RECOMMENDATIONS AND ACTION PLANS

The significant findings for transportation accidents involving radioactive materials are expressed here as recommendations, followed by a discussion and an action plan.

Recommendation 1. Since emergency response is primarily a local activity, it should be conducted under a formal incident command system with state and federal assistance properly linked to local responders through the incident command system.

A well-established principle is that local government is the first line of defense in an emergency. Public safety is a primary responsibility of government, especially at the local level where resources are close at hand. Furthermore many states, including New York, have a strong home-rule tradition, which makes local officials the primary decision-makers in matters that affect their community. The Incident Command System is widely adopted as the method of managing an emergency response at the local level.

In New York State, a Governor's Executive Order has established the National Interagency Incident Management System -- Incident Command System (ICS) as the state standard command and control system during emergency operations. This is the same Incident Command System recommended in the National Contingency Plan for Oil and Hazardous Materials.

The ICS organization is based upon the five functional areas of command, operations, planning, logistics and finance/administration. Normally the incident commander is a senior official from a local response organization and is the person in charge at the scene.

State and federal responders, including radiological teams, must recognize that the incident commander is in charge of the response to the emergency and make sure their plans and procedures are consistent with the Incident Command System by identifying the appropriate links with the local response organization.

Arriving state and federal assets should report their arrival to the incident commander (I.C.) and obtain a briefing from the I.C. (or the I.C.'s liaison officer), and explain how they can assist in the response. The state and federal responders should work with the appropriate functional sections depending upon their various roles. For example, the radiological team should coordinate with the Operations Section Chief when collecting field monitoring data or samples, with the Planning Section Chief when they determine the radiological impact of future activities, and with the Incident Commander's Safety Officer on responder radiation safety issues. Therefore, all local, state, and federal responders should receive Incident Command Training to better understand and plan how to link their activities to the appropriate ICS function.

Action Plan: Local, state and federal responders will mutually receive Incident Command Training and include ICS concepts in their response procedures to insure the proper linkages through the Incident Command System. Training will include how to determine when technical assets are needed, and how to obtain them.

Recommendation 2. Radiological emergencies should be handled as hazardous materials incidents requiring both hazardous materials response capabilities and radiological expertise.

Radiological Materials are considered one of the nine classes of hazardous materials in regulations of the U.S. Department of Transportation. Other rules that pertain to hazardous materials also apply to radioactive materials. For example, in the exercise, State Department of Health responders were required to follow the Occupational Safety and Health Administration (OSHA) rules for respiratory protection. One state responder was not permitted to enter the hot zone, because he did not pass the blood pressure test required for respiratory protection.

Action Plan: Radiological response will be incorporated, wherever possible, within hazardous materials response plans and procedures. Hazardous materials response teams will select and obtain training for several members in radiological response. The state will conduct an awareness program, develop planning guidance and provide training to accomplish this, using available assistance from the state and federal government.

State responders will become knowledgeable about local hazardous materials procedures and the Incident Command System to identify issues that affect them or the success of their efforts. This

will be accomplished through training programs or planning sessions arranged by each agency for their employees, usually at the regional level.

Recommendation 3. The State Radiological Authority should insure that technical assistance is provided on-scene as early as possible, and appropriate federal assistance is requested if needed.

In New York State, the Health Department, as the State Radiological Authority, investigates all radiological incidents in the interest of public health. The New York State Department of Environmental Conservation would also be activated in the case of a significant release to the surrounding environment. Often, state radiological responders will not be able to reach the scene for several hours.

In most areas, local responders are not trained in radiation protection, and the tendency for local responders to be confident of correctly dealing with any emergency may cause complications or delay the summoning of expert assistance.

However, with a little radiological training, local HAZMAT team members should be able to take some basic steps to prevent both exposure and the spread of contamination, at least until the arrival of state radiological responders.

Local plans and procedures should include recognition of the state and federal assets as resources, how to determine when they are needed, and how to access them. Local responders should seek technical assistance from the State Radiological Authority (i.e. State Health Department) as soon as radioactive material is known to be potentially involved. A failure to call in the state experts immediately may delay important activities. When called, the State Health Department radiological staff should offer some advice to responders as soon a possible, and then quickly mobilize to the scene.

The STAR 95 Exercise demonstrated the lack of a clear understanding of the differing roles of local and state responders. Questions on who should perform various technical tasks are complicated by the fact that local resources and capabilities vary widely across the state.

In STAR 95, a medical attention to a seriously injured victim was significantly delayed because of the presence of radiation. Others at the scene were detained several hours pending a state evaluation for radioactive contamination. Local monitors were unsure if they had the authority to screen individuals for contamination.

Action Plan: The State Radiological Response Plan will be revised to deal with the issues raised by EXERCISE STAR 95. The process of mobilizing the State Radiological Team will be streamlined to expedite their arrival on scene. Guidelines will be developed for providing simple advice to those on the scene until the State Radiological Team arrives. The State Health Department will improve guidance inter-relating local and state response, and establish a better

procedure for the integration of the assets of the several state agencies with radiological capabilities. This information will be integrated into the Radiological Response Plan.

Recommendation 4. Radiological response procedures should be incorporated within hazardous materials response plans. Radioactive materials are one class of hazardous materials. Response to radiation accidents is procedurally similar to response to other hazardous materials. All hazardous materials plans should include procedures for handling radioactive materials including hazard evaluation, exposure control, preventing contamination, and obtaining expert assistance.

Action Plan: The state will conduct an awareness program to increase recognition of the need for radiological procedures for HAZMAT teams. The State Emergency Management Office, with the assistance of the State Health Department, will develop planning guidance to assist in integrating radiological response into state and local hazardous materials plans, using available assistance from the state and federal government.

Recommendation 5. Hazardous materials response teams should have several members trained in radiological response skills, including radiological monitoring. Although radioactive materials accident response is similar to the response for hazardous chemicals, there are some differences that require additional training, including: hazard assessment, the distinction between exposure and contamination, using basic radiological instruments and interpreting data, and exposure effects and limits. Most local responders will likely be using the yellow emergency management instruments on loan from and maintained by the state. These instruments, although somewhat limited, are capable of identifying most serious radiation problems.

Action Plan: The State will provide an initiative to promote and provide radiological training as a part of the hazardous materials training effort. The training will be specifically evaluated against the health and safety standards under applicable radiological health and hazardous materials safety regulations. The state, with the support of the Federal Emergency Management Agency will continue to maintain, calibrate, and distribute radiation detection equipment to emergency responders through County Emergency Management Offices.

The state will advise localities, that have the desire and resources, on the establishment of an effective radiological protection program including appropriate instrumentation purchases.

Recommendation 6. Radiological responder training must be made more available at the local and state levels. Since radiological accidents are relatively rare, compared to other hazardous materials incidents, many response organization are not aware of the need to have special training. The Occupational Safety and Health Administration (OSHA) has, in recent years, established training standards for emergency responders that apply to all hazardous materials situations (29 CFR 1910.120).

The level of training needed by responders is based upon their organization's responsibilities and procedures. Basically, all responders should have awareness-level training, and each HAZMAT team that plans to respond to radiation accidents should have several members with operations level training, to insure availability. If radiological instruments are to be used, the purpose, scope, and limitations of their use should be stated, and appropriate training provided to the responders.

A variety of radiological training courses are available from local, state and federal government. The Federal Emergency Management Agency (FEMA) has an individual-study course, Radiological Emergency Management (I.S.-3). FEMA also offers classroom and field training in radiological response at different levels. The State Office of Fire Prevention and Control has a Radiation Safety for Firefighters Course. Several localities have instructors qualified to conduct training, but they are not plentiful enough to conduct the number of courses needed.

Action Plan: An awareness program will be undertaken to promote radiological training among the emergency response and emergency management community. This will include approaches to existing training academies and other organizations, hazardous materials teams, Local Emergency Planning Committees, and other hazardous materials stakeholders. The organizational structure already in place for hazardous materials training will be used to increase training opportunities. Additional instructors will be sought and more courses scheduled.

Recommendation 7. An on-scene public information component is essential because of public and media interest in radioactive materials incidents. Under the Incident Command System, the Incident commander has an Information Officer who is responsible for dealing with the media. Public Information Officers from responding organizations would assist this Information Officer to develop a consistent approach to the media

Early contact to the media should provide information on the incident and any protective actions for the public. The Information Officer should brief press representatives as soon as they arrive, and update them as often as necessary to keep them current. Media activities should occur near the accident site, but not in the immediate response area. Security forces must know where to send the press, and which areas are restricted. Media should not have access to actual responders except in rare pre-arranged instances, in which case they should be allowed to get back to their response duties as quickly as possible.

Action Plan: State public information procedures will be reviewed and modified as appropriate to adequately deal with the issues raised by STAR 95. The local public information role will be better defined in state guidance with an emphasis on the joint news center concept. Federal public information officers will be consulted to find approaches to better integrate the federal public information role, as part of the overall effort. Training courses, such as the U.S. Department of Energy's Transportation Public Information (TPI) will be used to train state and local public information officers and key media representatives.

Recommendation 8. The entire scope of radiation accidents from initial response to cleanup and recovery must be better coordinated. The response generally involves a broad spectrum of personnel ranging from first responders to technical experts, and personnel from several levels of government. Coordinating the response is more critical, difficult and complex than many realize. The initial response involves decisions on potential hazards and what expert assistance to seek, while cleanup and recovery will likely involve overlapping authorities and regulatory issues, not to mention significant cost.

Effective coordination calls for each organization to have a basic understanding of how its actions fit into the overall response, especially relative to other organizations that have similar or related roles. As the incident becomes resolved, decisions on the de-activation of the various response organizations must be based on reasonable and mutually acceptable criteria. The role of the transporter involved in the accident and the owner of the radioactive material (or other involved property) must be included at each stage of the response. Transportation-related incidents along shipping routes provide added dimension to public perceptions of hazards and the responders' ability to protect the public.

Action Plan: Radiological response organizations will review their procedures and share information on roles and responsibilities with other organizations at all levels of government. Adjustments will be made to the various procedures to encourage teamwork and better cooperation within the framework of the Incident Command System. Radiological responders will complete Incident Command System training to better understand how to operate in the Incident Command framework. All responders will be urged to take radiological awareness training to be generally familiar with the special issues that can arise.

V. FUNCTIONAL COMMENTS AND RECOMMENDATIONS

Observations, comments and recommendations relating to specific functions in Exercise STAR 95 are provided below. Many of these specific comments provide the basis for the Lessons Learned and Preparedness Recommendations and Action Plans found at the beginning of this report. The functions are listed in the chronological order in which they became involved with the exercise response.

A. LAW ENFORCEMENT:

A Saratoga County Sheriff's Office patrol car was the first responder to arrive (within five minutes of the 911 call) The officer rapidly gathered information, and correctly assessed and reported the situation to the Saratoga County dispatch. Within a few minutes New York State

Police (SP) arrived on the scene and assisted with traffic and accident scene control points. There was good coordination between Sheriff and SP. The SP Motor Carrier Safety trooper had arrived by 45 minutes after the accident, gave advice on site entry to EMS and Fire Personnel, took control of the vehicle after decontamination, performed a vehicle safety inspection, and declared the vehicle unusable until repairs were made. SP also assisted in monitoring in the package compartment area of the vehicle and issuing dosimeters to their personnel.

All law enforcement personnel used due caution regarding the electrical, radiological and fuel spill hazards on the scene. They were knowledgeable about procedures for minimizing the hazard to the public and responders. They correctly identified the radiological threat, by examining shipping papers and labels, traced the license plates to identify and notify the carrier, etc. Following the determination that the incident involved hazardous materials, and upon the arrival of the Jonesville Fire Chief, they relinquished incident command to him. The Fire Department called upon its Fire Police to control access to the immediate incident scene.

A gun found under the injured driver was checked for contamination, securely bagged, marked as possibly contaminated, and retained as evidence under police procedures.

Recommendations:

1. Continue to be prepared for hazardous (including radiological) materials emergencies.

2. Continue to ensure that properly calibrated radiological instruments can quickly be brought to an incident scene, and used by a trained operator.

3. Continue radiological monitoring training for adequate numbers of those who will use the instruments.

4. Participate in incident command training with responders from other disciplines.

B. FIRE AND INCIDENT COMMAND:

The initial response was prompt and showed proper respect for the downed electrical lines and spilled fuel. The electric utility company was contacted, and they sent a linesman to shut off the power. The radiological placard was quickly recognized, resulting in a call to the Fire Department's Hazardous Materials Team.

The need to establish a secure perimeter was recognized early, but security was not tight enough to prevent the entry of onlookers into the "hot zone," contributing to the contamination problem. The exercise artificiality of having a large number of official observers, controller/evaluators and supposedly "invisible" camera crews, even though they wore special hats, likely caused confusion for those charged with maintaining on-scene security. Also, a high wind made it difficult to keep barrier tape in place in the parking lot where the exercise was conducted.

The Incident Command System (ICS) was implemented by the Jonesville Fire Department, with the Chief serving as Incident Commander (IC). The IC appropriately discussed protective action needs. determined the isolation zone at a safe distance, and requested technical assistance.

Although the IC declared a level III (highest-level) emergency, many response actions were more typical of a level I emergency, more appropriate to a routine traffic accident; and this proved insufficient to deal with the scope of activities required for a radiological response.

For example, the IC did not direct the establishment of a staging area, perhaps unaware of the amount of resources that would be responding due to statutory and regulatory requirements. As a result, there was no single person responsible for informing the IC of assets arriving at the scene. Some arriving responders were not met at the entrance to the scene or directed where to go, or knew the location of the command post.

The command post was established in a fire vehicle which proved too small to allow required access of the command staff and others to the Incident Commander. As a result, the IC later established a larger command post in the Sheriff's mobile communications van, but this still proved too small, given the number of communicators in the vehicle. That command post also did not have a direct view of the accident site, or sufficient access control to limit the presence of non-essential personnel.

The fire department's public information officer was located back at the fire station, based upon past experience that media would telephone about the incident. When the media began coming to the accident site, the IC re-deployed his PIO to the scene. Initially, the IC was forced to handle the media briefings himself, causing a distraction from his command functions.

The Incident Commander made sure that nearby businesses, the school, and day care center were informed of the incident. Shelter in-place was recommended for the school and day care center. A determination had been made that there was no need to evacuate nearby businesses or residents. The nearby supermarket was asked to shut down its air ventilation system.

Recommendations:

1. Establish tighter perimeter control to limit media and public access to the accident site and the command post.

2. Establish a staging area with a staging manager to log the arrival of and marshall incoming resources, while awaiting their specific assignments and direction from Incident Commmand.

3. Establish a public information function at the scene to deal with the media.

4. Set up the command post with adequate space for functioning, and in an advantageous location with a view of the accident scene.

5. The IC should properly staff and use the Incident Command System to permit both prudent delegation of incident management activities, and free his time for important command functions and decisionmaking.

C. HAZARDOUS MATERIALS TEAM:

The Jonesville F.D. Hazardous Materials (HAZMAT) Team was responsible for dealing with the spilled motor fuel, and the initial response to the radiation problem pending the arrival of radiological experts.

The handling of the spilled fuel hazard was effective and appropriate.

Understandably, the team was not as familiar with radiological response as with chemical HAZMAT response. The HAZMAT team radiological mission assignments were sometimes ambiguous or confusing.

The only radiological equipment the HAZMAT team had was the standard emergency management equipment, which is the typical situation in New York State. With this equipment, responders can only expect to detect the presence of the most harmful radiation. CDV-700 Geiger counters were used for area and personnel monitoring, and the CDV-742 (0-200R) dosimeters to monitor their exposure as their procedure dictates. The procedure for preparation and testing of the equipment prior to entry into the scene was not available nor used. Responders found it awkward and difficult to use the radiological equipment while wearing turnout gear.

The HAZMAT team was slow to approve removal of the victim from the area due to concern about the radiological hazard. There did not seem to be a designated person in charge of the decontamination team. Personnel were not familiar with proper radiological decontamination procedures, and this resulted in actions that could have spread the contamination.

Recommendations:

1. OSHA HAZMAT training should better emphasize that, whenever radiological hazards are the only significant hazardous materials threat in a transportation incident, rescue and emergency medical care should be provided immediately.

2. The HAZMAT Team should have available, and follow, standard procedures for maintaining and periodically testing the readiness of radiation survey equipment, and for testing and preparing radiological equipment before entering the scene.

3. The HAZMAT Team should update their procedures to include more specific information on their role in radiological response, the monitoring function, and the instructions to be provided to their responders before entering the scene.

4. HAZMAT teams should receive more training on radiation instrument use and decontamination procedures appropriate to their role and and their procedures.

D. HIGHWAY

The intersection where the accident occurred involved town, county and state highways. Town/County Highway officials and the State Department of Transportation considered highway re-routing options for the closed portions of their highways. The State Department of Transportation was asked to provide highway traffic cones, a "road closed" sign, and two variable message signs. The Town Highway Department was asked for a load of sand for radiological shielding.

These activities were properly coordinated with the Sheriff and State Police officers who were controlling traffic. Since the exercise did not occur on real roads, most of the non-communications activities were simulated.

Recommendations: None

E. COUNTY EMERGENCY SERVICES

The Director of the Saratoga County Office of Emergency Services (OES) arrived about 30 minutes after the accident. Stationed at the Command Post, he assisted in the coordination of county resources to assist the local responders with the incident. He provided notification to the State Emergency Management Office, and requested state assistance on behalf of the Incident Commander.

The Director of OES has, on staff, a Radiological and Chemical Officer, who normally would provide technical assistance at the scene. Since most counties in New York State do not have such a resource, this individual was simulated to be unavailable, out of town on vacation, to make the response more typical of other counties.

The County Emergency Services Director provided a number of useful coordination activities for the Incident Commander and generally kept himself current on the situation.

Recommendations:

1. Each county should have available a radiological specialist, paid or volunteer, who can represent the interests of the local responders by gathering and explaining important radiological information. If knowledge, training, and equipment for monitoring and personal protection warrant, this Radiological Officer can also perform a basic preliminary monitoring of the accident scene until radiological health experts arrive. Under the Incident Command System, this individual is an important resource for the Incident Commander's Safety Officer, and his Section Chiefs for Operations and Planning.

2. In non-emergency times, the Radiological Officer should assist emergency services in developing radiological response procedures, providing the radiological component of HAZMAT training, and assisting in equipping responders with state-owned or other radiation detection instruments.

F. EMERGENCY MEDICAL SERVICE

The accident victim spent more than 90 minutes lying on the cold pavement, awaiting approval to be moved because of concern about the radiological hazard. The Incident Commander should have directed his removal earlier, and EMS should have been more forceful in requesting permission to remove the victim.

The initial survey of the patient did not identify the areas of contamination ("planted" lantern mantles). Once cleared by monitors, there was little attempt to control any contamination that might have been undetectable with the instruments available. Therefore, contamination would have been spread around the area, and to the ambulance crew, equipment, vehicle and possibly the hospital.

The hospital was not notified early enough from the incident scene that a contaminated patient would be arriving, so that they were forced to make the patient and ambulance wait while they completed preparations to prevent and control contamination.

Recommendations:

1. Emergency medical staff and others involved with the handling of the accident victim should have a clear understanding of contamination issues.

2. No one should assume that failure to detect radiation means there is no contamination. Some types of radiation may be undetectable by some instruments, so it is prudent to take anti-contamination precautions, such as wrapping the patient in a blanket, pending expert evaluation.

3. The ambulance procedures and training should be modified to insure that the hospital is notified as soon as possible of the planned arrival of a possibly contaminated patient.

G. HOSPITAL:

The accident victim was transported to Ellis Hospital in nearby Schenectady. The hospital was not notified early enough from the incident scene that a contaminated patient would be arriving. This prevented the hospital from being ready when the patient arrived, causing the patient to have to remain in the ambulance for some time.

Ellis Hospital has an agreement to accept contaminated patients from a nearby U.S. Department of Energy (DOE) facility, in which case DOE provides technical assistance at the hospital. For a

non-DOE emergency the Hospital might not have this assistance. The Hospital has a procedure for establishing a separate area to receive the injured patient, and control contamination, although there are some procedural ambiguities that need to be cleared up. There was a long delay in releasing the ambulance for return to service, because no one had been assigned to survey the ambulance, personnel and equipment for radioactive contamination.

The hospital requested technical assistance from the State Health Department Bureau of Environmental Radiation Protection (BERP), which sent an individual to assist. In reality, for such requests, BERP would not be able to have an individual on-site for at least an hour after the request depending upon the distance to the hospital.

Recommendations:

1. Review hospital response procedures for handling a radiologically contaminated patient that does not originate from a DOE site.

2. Assign an individual to monitor the ambulance, crew and equipment, prior to return to service.

3. The role of the State Health Department BERP assisting with a possibly contaminated patient at any hospital, and conditions for deployment, should be documented in BERP procedures.

4. State and local responders should have a list of those hospitals equipped and trained to handle patients contaminated with radioactive materials.

H. PUBLIC INFORMATION:

The Incident Commander did not establish a public information function on-scene early enough to accommodate the great media interest generated by the radiological nature of the incident. Following procedures, the fire department's public information officer began at the fire station; but, when media showed up at the scene, she was summoned by the Incident Commander to come to the scene..

Arriving media representatives were allowed free access to the responders at the scene. One reporter wandered into the contaminated area and was then held with others to be checked for contamination. While waiting to be monitored, he was able to question other potentially contaminated victims as well as other nearby responders. The reporters were also mingling with responders in the cold zone and obtained much unofficial information.

The slow start of the public information function was complicated by the fact that the county did not realize the great interest the media would show in the event, and did not recognize the need to specifically request the state to send public information assistance to the scene. The lack of an organizational structure for providing information through a single point of contact led to the information being obtained from anyone at the scene willing to be interviewed. In a real

emergency, this would have resulted in inaccurate and conflicting information. Once activated, and organized, the public information staff were effective at dealing with and defusing erroneous reports and rumors.

The first press briefing occurred 90 minutes after the accident and was well done. The PIO function was initially established away from the scene, but was later transferred closer to the scene with more direct access to the Incident Commander.

The press briefings used responders to provide information to the media instead of the spokespersons. The briefing schedule was not always timely, and when new important information was available, it was sometimes held until the next scheduled briefing.

Scene access control was improved when the Fire Police were in place. They appropriately barred further scene entry and did not answer questions from the reporters.

Recommendations:

1. Agencies with a role to respond to a radiological incident should clarify the roles and responsibilities of PIOs of various levels and agencies of government during the emergency response.

2. The incident commander should establish PIO function earlier and adjacent to the incident scene to prevent incorrect or conflicting information from being released to the public.

3. Security personnel must be briefed on how to deny scene access to the media, and direct them to the PIO function of incident command.

4. All responders should be instructed to refer media questions to the PIO to avoid becoming distracted from assigned duties.

I. STATE RADIOLOGICAL TEAM

State Warning Point was not notified of the presence of radioactive material as soon as it was discovered, resulting in a delay in the arrival of the state radiological team. When the state team did arrive, they appropriately reported to the local incident commander. The state team was not aware that the local responders would check their vital signs, under OSHA rules, prior to being permitteed to enter the scene. One member of the state team failed the blood-pressure test and was not allowed to wear respiratory protection or enter the scene. This meant that a single individual had to survey the accident area as well as those people who were suspected of being contaminated.

Procedures called for the State Health Department, after reporting to the scene, to request additional assistance from the State Department of Environmental Conservation Bureau of Radiation. This action was initiated by exercise controllers, to prevent undue delay in the multi-agency response.

It was difficult to tell who the state responders were or what organizations were present because, for the most part, they did not have identifying apparel. Both local and federal responders had jackets and hats identifying their organizations.

The State Radiological Team monitored the area to determine the extent of contamination and also, at the request of the county, monitored for contamination, the persons that had been in the area. The team spread a tarp over areas and containers suspected of contamination to prevent dispersal by wind. The highway department was requested to provide sand for shielding. Iridium 192 sources were collected and secured. Air samples showed no measurable spread of radioactive materials. Soil and water samples were also collected and sent to the Health Department Laboratory in nearby Albany.

The sharing of radiological survey information among the local, state and federal participants caused confusion. There was no single location where data was compiled or available.

Recommendations:

1. Before an emergency occurs, the State should better inform local government of the types of radiological services it can provide and of the need for local responders to promptly request Health Department assistance through the State Warning Point.

2. The state should incorporate OSHA requirements into plans and procedures for responding to an incident scene. It may be prudent to mobilize additional personnel to the scene, in case vital-sign screening reduces the number of eligible responders.

3. The State Spill Hotline procedures on how to handle reports of a radiation accident should be reviewed to insure consistency with state policy.

4. Notification procedures for requesting state inter-agency assistance should be reviewed for any needed changes. Considering the length of time required to mobilize a radiological response team, it may be appropriate to request inter-agency assistance before arrival at the scene. There should be a clear specification of the type of assistance needed.

5. The state radiological function must be clarified on interagency roles, monitoring procedures and a consolidated data collection and analysis function.

6. State responders should have jackets, vests, and hats, clearly identifying their organization and function, for example: "NY State Health, Radiological Response Team."

7 Radiological and other technical data should be maintained, shared and analyzed in a single location. This would be a location that functions similarly to the Federal Radiological Monitoring and Assessment Center (FRMAC). Access must be controlled to this location, to allow only authorized personnel. The State Health Department, as lead agency, should pre-plan this activity and identify resources so the State Radiological Team is ready to request specific assistance from the Incident Commander for security, lights, shelter, or other critical needs.

8. The state radiological team should be supported by a consistent communications plan to allow for interagency coordination, for example: exchange of cellular telephone numbers and radio frequencies.

J. FEDERAL RADIOLOGICAL TEAMS

Two teams from the U.S. Department of Energy responded under the Radiological Assistance Program (RAP): the Knolls Atomic Power Laboratory (KAPL) team, located within Saratoga County; and the Brookhaven National Laboratory (BNL) team, located on Long Island, NY.

The KAPL team was notified by Saratoga County of a possible need for assistance 45 minutes after the accident, and carried out additional notifications and coordination with the State, BNL and the accident scene. In accordance with normal procedure, it was agreed that the State would respond first and evaluate if federal assistance would be needed.

An attempt by the on-scene responders to telefax shipping papers to the KAPL team was unsuccessful.

Following its on-site evaluation, the State requested federal assistance 2 ½ hours after the accident and the KAPL team, having been on standby, arrived 20 minutes later. The KAPL team provided monitoring, sampling and other technical assistance with additional, more sophisticated, equipment.

The BNL team, already en route, arrived at the scene five hours post accident, and assumed the lead federal role. The BNL team brought a mobile laboratory containing considerable advanced radiological analytical equipment. They also brought a public information officer to help work with the media.

A number of media representatives started to interview the RAP team upon their arrival, thereby distracting them from their mission.

Unfortunately, BNL was not afforded the opportunity to demonstrate much of its capability because of the termination of the exercise. Had the exercise continued to conclusion, the BNL mobile laboratory would have been an indispensable asset for identifying the radioactive materials present. However, the BNL mobile laboratory and its capabilities were demonstrated for exercise participants.

Recommendations:

1. Several communications problems should be checked to see if corrective actions are needed. The inability of responders to fax the shipping papers to KAPL should be investigated, and corrected, if possible. Cellular phone coverage should be checked to see why a KAPL call to a Saratoga County cell phone got a "customer outside coverage area" message.

2. Further joint exercises, drills and training programs involving state and federal response teams should be conducted to further familiarize team members with each others' various capabilities, procedures, and sharing of technical information. Appropriate local responders should be included in these activities.

3. Media inquiries to the RAP team should be directed to the public information team location. The incident commander and RAP team leader should negotiate the location of the mobile laboratory where radiological mission needs can be met, and where access of the public and media can be controlled.

4. In future exercises, exercise controllers should ensure that all participants, including radiological teams have adequate time to perform their functions and meet their exercise objectives.

VI. PREPAREDNESS ACTIVITIES AND EXERCISE DEVELOPMENT

The Saratoga Transportation Accident Response (STAR) planning process had two basic objectives: (1) to initiate a program to improve local preparedness for radioactive transportation accidents and (2) to prepare the response community for the STAR 95 exercise.

A. Objectives

Preparedness objectives are listed in Attachment 1. They include public official awareness activities, reviewing emergency plans and procedures, delineating response roles, training for responders and public affairs staff, developing and conducting both a tabletop and a field exercise to test the plans and procedures, and explore the relationship between radiological incidents and other hazardous materials.

Exercise objectives are detailed in Attachment 2. They include achieving a well-coordinated response involving local, state and federal governments, demonstrating the ability to protect the public and emergency workers in the context of the Incident Command System, demonstrating a public information capability and relating a radiological response to the normal hazardous materials incident response process.

B. Organization

Initially the participating organizations had only a basic understanding of the roles of the County, the State and U.S. DOE in radiation accidents, but little knowledge of how these resources would interact with each other. A large committee of representatives from all participating organizations, was formed to carry out the Program. This group established smaller committees to specialize in the following areas:

Response Plans and Procedures
Responder Training
Public Information
Scenario Development
Exercise Logistics
Exercise Evaluation

The State of New York was awarded a grant from the U.S. Department of Energy (DOE) for $90,000. The funding was used to support the efforts of three organizations: the State Emergency Management Office, State Department of Health and Saratoga County.

DOE also provided an experienced contractor to assist the State in developing and conducting the exercise. This individual had a working knowledge of radiological accident response and had developed numerous exercises in the past, including similar local, state and federal exercises.

DOE conducted two Radiological Emergency Training for Local Responders (RETLR) courses in Saratoga County for local and state responders, and the Transportation Public Information (TPI) Course for state and local public information officers in nearby Albany.

C. Exercise Development

Participating organizations provided their own objectives for the exercise, so an appropriately devised scenario could permit participants to test selected aspects of preparedness and response. This information was then used to develop the scenario and a list of exercise evaluation points of review for each function.

A location where the accident hypothetically occurred (scenario location) and the actual site of the exercise (exercise site) were chosen. A basic scenario outline was developed, followed by an exercise time-line and sequence of events. In order to meet exercise objectives, simulated messages and events were prepared to initiate neeeded actions that might not occur during free play.

Members of the Scenario Development Team were not used as players but performed exercise control and evaluation functions. Care was taken to prevent exercise players from learning about the scenario before the exercise.

The Public Information Committee was active in three areas: (1) development of actual public information on the exercise, and on transportation and preparedness issues; (2) preparedness for the public information function of the responders as part of the exercise play; and (3) selection and training of actors playing news reporters during the exercise.

The Logistics Committee, directed by Saratoga County, insured that all materials were provided for the exercise, including for the exercise site preparation, vehicles, supporting materials, maps, food, sanitation, travel and lodging assistance, etc.

The U.S. Department of Energy, Brookhaven Area Office, provided two video film crews to record the exercise and critique, and develop a short videotape on STAR 95.

D. Table Top Exercise

On September 7, 1995, seven weeks before STAR 95, a 2-hour tabletop exercise was held as a warm-up for all participating organizations. The purpose of this tabletop exercise was to examine roles, responsibilities, coordination, and communications requirements and resources during a transportation accident involving radioactive materials. A special scenario was developed for a truck carrying radioactive materials developing a flat tire, losing control, crashing in a corn field, and ejecting barrels of radioactive waste.

Sitting at tables arranged in a horseshoe, participants were given the scenario and several

messages designed to provide the problems. With the assistance of a facilitator, participants discussed what their actions would be at various stages of the scenario. The tabletop exercise helped participants understand their roles and the roles of the other response organizations.

At the tabletop exercise, several facilitators recorded significant activities and key organizational issues on flip-charts. At the critique, a number of response and coordination issues were brought up which would be discussed and resolved in preparation for the STAR 95 Exercise.

VII. STAR 95 EXERCISE

The STAR 95 (Saratoga Transportation Accident Response) Exercise was conducted in Clifton Park, Saratoga County, New York, on October 25, 1995. It simulated a highway traffic accident involving two trucks, one a carrying radioactive pharmaceuticals and the other loaded with farm produce. The exercise involved over 120 local, county, state, and U.S. Department of Energy personnel with roles arising from such an accident. Also participating were over 30 controllers and evaluators, and a dozen actors. On October 26, a Cleanup Recovery Tabletop Exercise was held for organizations that would be involved in cleanup and recovery activities for such a scenario.

Organizations participating in STAR 95 were:

Local Organizations:

Jonesville Fire Department and Hazardous Materials Team
Clifton Park-Halfmoon Ambulance Corps
Clifton Park Town Supervisor
Clifton Park Public Information Officer
Clifton Park Fire Marshal
Clifton Park Highway Department

Saratoga County:

Office of Emergency Services
Sheriff Department
Deputy Director for Fire Services
Public Information Officer

Schenectady County:

Local Emergency Planning Committee
Ellis Hospital

New York State:

Department of Health
State Emergency Management Office
State Police
Department of Environmental Conservation
Office of Fire Prevention and Control
Department of Transportation
Public Service Commission
Department of Agriculture and Markets
Public Information Officers

Federal Government:

U.S. Department of Energy - Brookhaven Area Office
U.S. Department of Energy - Knolls Atomic Power Laboratory

Although the exercise was held on a week-day, many local volunteer responders took the day off from their regular jobs to participate. Their interest and professionalism were inspiring and a tribute to their dedication to ensuring public safety.

The media coverage was gratifying. The three main networks all had coverage on their local television news both in the evening and for their nightly broadcasts. There were also several newspaper stories.

VIII. ACKNOWLEDGMENTS

Many organizations provided significant contributions to non-response activities such as training sessions, meetings, logistical requirements, etc. Our appreciation extends, in particular, to these organizations for their invaluable assistance.

Borst Tire Co. Inc. for exercise props
Cellular One for exercise control communications equipment.
Town of Clifton Park for the exercise site and preparation, including special accommodations for the participants, meeting space, and spectator seating.
Clifton Park Soccor Club for food service at the exercise.
Gill's Garage Inc. for vehicle exercise prop
Jonesville Fire Department for classrooms and meeting space.
Mama's Pizza Oven and Restaurant, Inc. for food servoce for training courses, meetings and the field exercise.
Shenendehowa School District for assistance in exercise planning
Sperry Advertising for Star 95 patches and controller hats