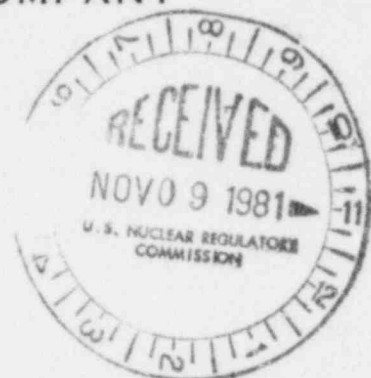


BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 1475
BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

October 21, 1981



Mr. Ronald C. Haynes, Director
U. S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Docket Nos. 50-317
50-318

Dear Mr. Haynes:

In response to your request of December 24, 1980, the medical and radiological exercise of the Calvert Cliffs Emergency Response Plan will be conducted on November 17, 1981 from 3:00 am until 8:00 pm. The State of Maryland and three counties surrounding the plant will participate in the exercise. Enclosed are the exercise objectives and the scenario.

Should any questions arise, please do not hesitate to contact us. The individual coordinating the exercise is Mr. S. E. Jones, Jr., Supervisor of Training (301-269-4798).

Sincerely,

A. E. Lundvall, Jr.
A. E. Lundvall, Jr.
Vice President - Supply

enclosures: (1) Exercise Objectives, BG&E
(2) Exercise Objectives, State of Maryland
(3) Scenario (BG&E only)

cc: Mr. Brian K. Grimes, Director
Dr. Robert J. Bores
Mr. David Rohrer

AEL/SEJ/ksw

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CALVERT CLIFFS NUCLEAR POWER PLANT
EMERGENCY RESPONSE EXERCISE

I. Exercise Objectives and Guidelines

The following exercise objectives and guidelines have been jointly developed by the State of Maryland, Calvert County, Dorchester County, St. Mary's County, and the Baltimore Gas and Electric Company (BG&E). They will be used in conjunction with the integrated exercise of the State of Maryland Radiological Emergency Plan and the Calvert Cliffs Emergency Response Plan on November 17, 1981.

A. Exercise Objectives

1. For the BG&E (licensee) Emergency Response Organization:
 - a. Demonstrate proficiency in classifying the emergency.
 - b. Demonstrate efficient and effective notification and alerting procedures and methods.
 - c. Demonstrate the ability of the Organization to maintain command control.
 - d. Demonstrate precise and clear transfer of responsibilities from the onsite emergency organization to the corporate Recovery Organization.
 - e. Demonstrate the ability to correctly station personnel.
 - f. Demonstrate reliable and effective use of emergency communications equipment and communications procedures.
 - g. Demonstrate the capability to evaluate and produce accurate and timely public information releases.

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h. Demonstrate the ability to provide adequate medical care for an injured and contaminated person.

2. State and Counties - as defined in enclosure (2).

B. Exercise Guidelines

To define the "extent of play" by the exercise participants and meet the exercise objectives, the following exercise guidelines have been developed:

1. The exercise will be conducted on November 17, 1981.
2. The exercise will commence with a postulated excessive leak rate necessitating a declaration of a Notification of an Unusual Event and escalate through the four emergency action levels to a General Emergency.
3. The postulated accident conditions will result in a simulated radiological release which necessitates the consideration of protective actions for the general public. Meteorological conditions will be varied once during the exercise so all three surrounding counties are involved in the exercise.
4. Exercise participants will perform, as appropriate, radiological monitoring, dose assessment, and ingestion pathway sampling activities.
5. Radiological monitoring field teams will be dispatched for the purpose of testing response time, communications, monitoring procedures, and sampling procedures. Sample

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counting techniques will be demonstrated, although simulated readings, provided by observers, will be reported.

Each radiological monitoring field team will be accompanied by a controller/observer throughout the exercise.

6. All onsite and offsite emergency response facilities, will be manned and will perform their prescribed functions.
7. The Media Center in Prince Frederick will be manned and will perform its prescribed function. Members of the press will be invited to observe the exercise. Exercise press releases will be made to the media.
8. Medical facilities at Calvert Memorial Hospital will be tested through the evacuation of a simulated injured Calvert Cliffs Nuclear Power Plant worker for treatment and decontamination. Monitoring and decontamination actions and procedures will be demonstrated at the receiving hospital.
9. The postulated accident conditions will warrant the assembly and evacuation of non-essential site personnel. The plant emergency alarm will be sounded and personnel assembled and evacuated.
10. Participation by BG&E onsite personnel directly involved in responding to an emergency shall be carried out to the fullest extent possible, including the deployment of radiological monitoring teams, emergency maintenance teams, and other emergency workers.

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11. Exercise participants will include the following organizations:

a. Baltimore Gas and Electric Company:

1. Site Emergency Organization
2. Recovery Organization

b. All State and County key and support agencies necessary to demonstrate the actions in enclosure (2).

c. Calvert Memorial Hospital

d. Solomons Volunteer Rescue Squad.

Active participation in the exercise will only be required of the above listed organizations. If the exercise scenario requires that any other organizations and/or officials be contacted, they shall be contacted for the purpose of checking communications only. All federal responses to an emergency will not be demonstrated or simulated.

ACCIDENT ASSESSMENT1 NOTIFICATION

A Were notification messages accurately and quickly disseminated vertically/horizontally?

Rating

B Were they verified according to procedures?

Rating

C Were officials/organizations with immediate response notified first according to procedures?

Rating

2 COMMUNICATIONS

A Were outgoing/incoming messages handled accurately?

Rating

B Were outgoing/incoming messages handled quickly? Did preoccupation with logging impede message routing?

Rating

C Did internal message distribution system provide the quick routing of important messages?

Rating

D Was word "exercise" used at the beginning and end of all incoming or outgoing messages?

Rating

E Was the communication system with all coordinating centers and field elements adequate?

Rating

F Were communicators familiar with the assignments?

Rating

G Were adequate quantities of accident report forms on hand at each location? Was this notification received and fanned out?

Rating

H Were telephone listings complete and up-to-date?

Rating

3 DIRECTION AND CONTROL

A Was there continuous "coordination" among the players? Did they "communicate" freely and actively with each other in a cooperative/joint effort either with or without prompting by the official in charge?

Rating

- B Were all players kept constantly informed of efforts as they occurred (either through briefings or announcements or both)? Rating
- C Were decision makers kept constantly informed? Rating
- D Were maps and visual display boards kept up-to-date and effectively utilized? Rating
- E Did the coordinating center operate in a efficient manner with a minimum of noise and confusion? Rating
- F Did the coordinating center have an effective means of security, both internally and externally? Rating
- G Did the coordinating center handle requests for assistance quickly by identifying existing resources or if none were on hand, in making their need known quickly to other centers? Rating
- H Were procedures adequate? Rating
- I Were center personnel and decision makers familiar with plans and procedures and were they followed? Rating
- J Did shift changes/change of personnel occur with a minimum of confusion and were replacements adequately briefed? Rating
- K In the final analysis, did the coordinating center significantly "control" the outside situation so as to mitigate its effect? Rating
- L Were liaison personnel from other organizations kept informed and effectively used? Rating
- M Did liaison personnel perform effectively? Rating
- N Did plans/procedures call for line-of-succession of key positions? Were replacements familiar with responsibilities if they had to assume a key position unexpectedly? Rating

- O Were all access control points, Mass Care Centers and emergency workers kept informed of the accident status, the actions that were being taken and locations where school children and evacuees were being taken, (if applicable)?

Rating

- P Was information coming back to the control center on when and where access control points were established, when Mass Care Centers were opened and staffed? In other words, was information on all other activities outside the center flowing back into the center?

Rating

- Q Were provisions made for Federal Support (FRMAP) adequate (communication, housing, feeding, transportation, etc.)?

Rating

ACCIDENT ASSESSMENT (TECHNICAL)ACCIDENT ASSESSMENT CENTER OPERATIONS

- | | | |
|----|--|---------------|
| 1 | Was center quickly made operational? | <u>Rating</u> |
| 2 | Did center have operational equipment on hand (maps, calculators, charts, overlays, calculation sheets, the REP and stationary supplies) on hand? | <u>Rating</u> |
| 3 | Were key center personnel familiar with technical data and procedures? | <u>Rating</u> |
| 4 | If key technical center personnel became inoperative for any reason, did their replacements have familiarity with technical data and procedures? | <u>Rating</u> |
| 5 | If center itself became inoperative for any reason, were there plans for an alternate center location with minimum communications equipment available? Was relocation thereto accomplished efficiently with minimum loss of control? | <u>Rating</u> |
| 6 | Were calculations timely and results plotted quickly? | <u>Rating</u> |
| 7 | Was outside assistance (i.e., DOE) when provided integrated into centers overall operation? | <u>Rating</u> |
| 8 | Once calculation demonstrated a need or potential need for initiating one or more protective actions or protective actions were recommended by the utility, was this information quickly and accurately passed to decision makers? | <u>Rating</u> |
| 9 | Did decision makers consider not only recommended protective actions but other factors as well, such as impediments to their successful implementation (such as blizzards, traffic impediments, etc.)? | <u>Rating</u> |
| 10 | Was there continuous and close interfaces at all times between the center and the decision makers? | <u>Rating</u> |
| 11 | Were organizations with support functions familiar with technical assignments, integrated in the overall center operations and effectively used? | <u>Rating</u> |

ACCIDENT ASSESSMENT (FIELD MONITORING TEAMS)

- 1 Did team members operationally check equipment provided to them prior to departure?

Rating
- 2 Were team members familiar with use of the equipment, field monitoring procedures, and what was required of them?

Rating
- 3 Did each team have up-to-date plume and/or ingestion zone maps?

Rating
- 4 Were team members properly briefed on their assignments and updated on the status of the accident prior to departure?

Rating
- 5 Were teams provided with accident updates while performing field missions?

Rating
- 6 Was each team member and support personnel (drivers, guides, pilots) provided with the necessary dosimeters, TLD, radiation exposure record, KI, and protective clothing prior to departure.
- 7 Did each team member and support personnel, upon completion of their field assignment, check in at a designated radiation exposure control center to be checked for contamination? Was their vehicle and equipment checked also?

Rating
- 8 Did each team member have familiarity with all available communications equipment and standard communications procedures?

Rating
- 9 Was each team member familiar with the responsibility of the other so that each could adequately perform any task at any time?

Rating
- 10 Were field teams organized in shifts?

Rating
- 11 Were there provisions for team member replacements in the event one or more members could not function for any reason? Did these replacements have knowledge of what was required of them?

Rating
- 12 Were spare parts (bulbs, batteries, fuses) tools and monitoring equipment on hand for each item?

Rating

- 13 In the final analysis, did each team know what it was doing and did perform its missions adequately?

Rating

PUBLIC INFORMATION

- 1 Were news media announcements coordinated between State/Local/Utility officials prior to releases at all times?
- 2 Were news media announcements accurate and were they couched in concise and easily - understood language?
- 3 Was there a close and continuing interface between the public information effort and the operations effort to ensure accuracy and currency of facts.
- 4 Was the EBS system effectively utilized to keep the public continually informed?
- 5 Was it clear who initiated EBS messages in the content of the messages?
- 6 Were sirens utilized to alert the public to tune in the applicable EBS station for information and instructions?
- 7 Were other than EBS news media outlets utilized to keep the public informed (hot-lines or rumor control, newspapers, TV and other radio stations?)
- 8 Did all plume zone county and state PIO's have representatives at the utilities news media center?
- 9 In the final analysis, was the entire private/local/state public information effort in keeping the public informed through EBS and other means an efficient and coordinated affair?

Rating

Rating

Rating

Rating

Rating

Rating

Rating

Rating

Rating

FOOD/WATER/MILK/LIVESTOCK FEED CONTROL

- 1 Were maps available depicting locations where sampling would be accomplished?

Rating
- 2 Were sample results plotted on I.P.C.C. status maps?

Rating
- 3 Were state and local public information and operational channels effectively utilized to disseminate information and directives on those not fit for consumption?

Rating
- 4 Once the use of food, water, milk and/or livestock feed were proscribed and were realistic plans made to obtain uncontaminated substitutes?

Rating
- 5 Were the procedures for collecting samples followed?

Rating
- 6 Was the collection and analysis process accomplished in a timely manner?

Rating
- 7 Were personnel responsible for the collection, transportation and analysis of sample familiar with established procedures so that samples collected were representative of actual deposition and vegetation? Was care taken in handling the samples after collection to insure that further contamination did not occur.

Rating

ACCESS CONTROL

- 1 Did access control personnel check all emergency workers going into controlled areas for dosimeters, TLD's, radio communications and radiation exposure records?

Rating

- 2 Were access control personnel provided with necessary dosimeters, TLD's, radiation exposure records, communication, KI and accident update prior to departure on their mission?

Rating

- 3 Were access control point personnel provided with periodic updates on the status of the accident and other information on where school children and other evacuees were taken?

Rating

- 4 Were access control points established so as to realistically "control" access into restricted areas? (were there a substantial number of gaps)?

Rating

- 5 Were plans/procedures flexible enough so that persons with compelling reasons could re-enter controlled areas under certain circumstances (example - going back home to get children)?

Rating

- 1 When the protective action of "take shelter" was recommended or directed, for particular areas, was it adequately broadcasted over the EBS? Were other means of disseminating the recommendation or directive utilized (such as mobile public address systems)?

Rating

- 2 Were the boundaries of "take shelter" areas couched in terms easily recognizable to the public, such as well-known roads and geographical land marks?

Rating

- 1 When the protective action of "evacuation" was recommended or directed, for particular areas, was it adequately broadcasted over the EBS? Were other means of disseminating the recommendation or directive utilized (such as mobile public address systems)?

Rating
- 2 Were the boundaries of "evacuation" areas couched in terms easily recognizable to the public, such as well-known roads and geographical land marks?

Rating
- 3 Were arrangements made for "collecting" evacuees who did not have their own transportation?

Rating
- 4 Were special arrangements made for "collecting" handicapped evacuees or other individuals with special transportation requirements?

Rating
- 5 Were arrangements made and carried out to monitor evacuees for radiological contamination at appropriate centers with special attention to those with a higher probability of contamination?

Rating
- 6 Were arrangements made to inform evacuees who had used their own vehicles and who had not reported to evacuation centers where they could go to have themselves and their vehicles checked for possible contamination?

Rating
- 7 Were the instructions provided to the public prior to evacuation on what steps should be taken prior to evacuating one's home or apartment adequate? (electricity, water, pets, etc.)

Rating

MASS CARE

- 1 Were the evacuation centers properly staffed for the registration and feeding of evacuees?
Rating
- 2 Were arrangements adequate for sleeping?
Rating
- 3 Were provisions made for the special needs of the handicapped or very elderly?
Rating
- 4 Did the center staff effectively utilize evacuees in handling the many necessary tasks?
Rating
- 5 Were evacuees kept up-to-date on the status of the accident?
Rating
- 6 Was there a means provided for the location of an evacuee by a friend or relative and was the public made aware of this?
Rating
- 7 Were the centers properly equipped with or were plans in place to provide for food, toilet paper, soap, towels, etc. for a protracted period of time?
Rating
- 8 Were each center equipped or were plans in place for providing radio communications?
Rating

EMERGENCY MEDICAL SERVICES

- 1 Were EMS personnel familiar with procedures for handling contaminated patients?

Rating

- 2 Did EMS personnel (ambulance teams) have monitoring equipment on hand and were they familiar with their operation?

Rating

- 3 Did EMS personnel know what to do to quickly decontaminate a patient who was contaminated with radiation, if decontamination was possible and necessary?

Rating

- 4 Did EMS personnel know what to do to protect themselves before contamination and what to do to themselves, their vehicles and equipment after contamination?

Rating

- 5 Did the nearest hospital have procedures and equipment for handling contaminated patients?

Rating

1 Was the decision to initiate "re-entry" made according to procedures, i.e., were radiation and contamination levels, along with the economic impact of an evacuation properly evaluated?

Rating

2 If a limited re-entry was recommended (e.g. males over 40 years of age); did the public announcements put the risks and benefits associated with a limited re-entry in proper perspective?

Rating

3 When full re-entry was recommended, were all media methods utilized to their fullest?

Rating

4 Was transportation adequate for those returning from evacuation centers?

Rating

5 Were provisions made for special problems which would occur if the area had been evacuated for an extended period., e.g., stocking stores with fresh supplies of food and clothing, adequate supplies of fuel oil, gasoline, supplies of cash at banks, provisions for pickup of spoiled food, etc.?

Rating

6 Were news releases worded in such a way to assure the public that, indeed, the danger was over and they were safe to re-enter their homes?

Rating

LAW ENFORCEMENT/CRIME PREVENTION

- 1 Were there effective procedures for handling apprehended suspects who were contaminated?

Rating

- 2 Were law enforcement officials going into controlled areas equipped with monitoring equipment and were they familiar with their use?

Rating

- 3 Were there plans to have law officers assigned to mass care centers or to stop in for periodic visits?

Rating

RADIATION EXPOSURE CONTROL

- 1 Were all emergency workers provided with T.D.'s, dosimeters, radiation exposure records, KI and communications equipment as appropriate?

Rating
- 2 Were all emergency workers, their equipment and vehicles checked for contamination immediately after a mission?

Rating
- 3 Were emergency workers briefed on the accident status and recommended stay times prior to a mission and were they provided with updates during the mission?

Rating
- 4 Were emergency personnel effectively rotated so as to prevent over exposure?

Rating
- 5 Were center personnel responsible for checking out emergency workers or evacuees, their equipment and vehicles familiar with monitoring equipment, monitoring procedures and decontamination procedures?

Rating
- 6 Were emergency worker or evacuees doses properly recorded and were appropriate actions taken in the event of contamination (i.e., decontamination or restrictions on any further movement into controlled areas or both)?

Rating
- 7 Were records regarding contamination levels before and after decontamination kept for emergency workers and evacuees and equipment?

Rating
- 8 Were contaminated wastes in general, (clothes, towels) properly stored for later disposal?

Rating
- 9 Was there an adequate supply of road maps and sector/zone maps of the EPZ for all emergency workers?

Rating
- 10 Were available stocks of KI obtained and transported to pre-selected distribution centers?

Rating
- 11 Did procedure for obtaining extra supplies of KI include updated names, addresses and 24 hour phone contacts or outlets?

Rating

PLANT SCENARIO
FOR
RADIOLOGICAL EMERGENCY EXERCISE
NOVEMBER 17, 1981

I. GENERAL DESCRIPTION

A. Casualty

This exercise will simulate the rupture of several tubes in #1 Steam Generator. The resultant Loss of Coolant Accident will be complicated by simulated faults which will cause #11 High Pressure Safety Injection Pump not to start, #11 Atmospheric Dump Valve (1-CV-3938) and the manual isolation valve for 1-CV-3938 to stick open. The above combination will result in core damage and a release pathway to the atmosphere.

In order to include iodine inhalation exposures, an unrealistically high elemental iodine release will be simulated during the entire exercise.

B. Meteorological Conditions

Meteorological conditions will be controlled by this scenario. This will allow the preplanning of both the areas affected by the radioactive plume and the radiation levels inside the plume. The actual meteorological conditions on the day of the exercise will not be used!

Initially the wind direction will be 050°, which will take the plume south west over Sotterly in St. Mary's County. At 4:00 p.m., the wind will shift counter clockwise to 250° stabilizing about 4:30 p.m.

C. Duration

The exercise will commence at 3:20 a.m. and conclude at 8:00 p.m. After the 3:30 wind shift, Calvert and St. Mary's counties will terminate their EOC operations and critique the exercise as detailed below.

D. Press Release

Prior to the exercise, the Maryland Civil Defense and Disaster Preparedness Agency's Public Information Office will provide a brief description of the exercise to newspaper, radio, and TV stations in Maryland; especially those in Calvert, Dorchester, and St. Mary's counties.

II. INITIAL CONDITIONS

A. Plant

1. Both units are operating at 100% power.
2. A 100 gpm bottom blowdown is in progress on both steam generators.

3. Number 12 High Pressure Safety Injection Pump
is out-of service for maintenance.

B. Meteorological

1. Wind direction is from 050°
2. Wind average band width 7.5°
3. Wind Speed 5 mph
4. Difference in temperature +3°
at 200 feet

III. SCENARIO

<u>EMERGENCY CONDITION</u>	<u>TIME</u>	<u>EVENT</u>	<u>PLANT EXPECTED ACTION</u>
NONE	3:30 AM	½ gpm leak begins in #12 Steam Generator (SG) Radiation Monitor indications begin to show levels above background.	NONE
	3:45 AM	Alarm on SG Blowdown Rad Monitor	Investigate Alarm
UNUSUAL EVENT	3:50 AM	Alarm on Condenser Cff Gas Rad. Monitor	Declares Unusual Event. Samples SG's.
ALERT	6:00 AM	Leak rate increases to 5 gpm.	Declares ALERT and starts shutdown Unit 1, Mans ECC.
SITE EMERGENCY	9:00 AM	Several SG tubes rupture plant trips automatically one pump fails to start. Release to atmo- sphere still minor. Dose rate in the plume at the site boundary is 10 mR/hr.	Declares Site Emergency, send monitor teams into field.

<u>EMERGENCY CONDITION</u>	<u>TIME</u>	<u>EVENT</u>	<u>PLANT EXPECTED ACTION</u>
SITE EMERGENCY	10:15 AM	Leak rate into the SG increases, resulting in larger off site dose rates. Dose rate in the center of the plume, at the site boundary, is 50 mR/hr. Projected dose to the thyroid is 0.5 REM.	Continues cooldown of plant in order to reduce primary pressure and thus reduce plant leak rate. State may issue an advisory to seek shelter and await further instructions in Sectors SSW/SW/WSW/W-1 through 10.
	10:30 AM	Equipment problems cause a loss of cooling to the reactor.	Attempt to repair the affected equipment.
<u>GENERAL EMERGENCY</u>	10:45 AM	Core damage occurs. Release rates increase because of the fuel failure. Projected iodine dose to the thyroid is 1.5 REM.	Recommends mandatory take shelter. Precautionary evacuation of pregnant women and children in Sectors SSW/SW/WSW/W-1 through 10. Additionally, the plant will recommend that the State/County consider evacuation of all personnel out to three (3) miles from the plant.
	12:30 PM	Core damage continues to increase. Dose rate at the site boundary in the center of the plume is 250 mR/hr. Projected iodine dose to the thyroid is 6.0 REM.	Recommends use of KI by emergency workers required to transit the plume.
	1:05 PM	One person injured while attempting to effect repairs to degraded plant system.	Plant notifies Hospital and EOC's that a radiologically contaminant injury has occurred and that transport to the hospital is required. Transport of injured person by Solomons Vol. Rescue Squad.

<u>EMERGENCY CONDITION</u>	<u>TIME</u>	<u>EVENT</u>	<u>PLANT EXPECTED ACTION</u>
	1:05 PM	continued	Treatment by Calvert Memorial Hospital in Radiation Emergency Area.
	2:00 PM	Efforts to isolate leak are unsuccessful. Reactor core still degrading. Dose rate at site boundary in the center of the plume is 300mR/hr. Projected iodine dose rate to the thyroid is 8.0 REM.	
	3:00 PM	Plant is still not able to reestablish adequate cooling to the reactor core. Dose rate at the site boundary in the center of the plume is 700 mR/hr. Projected dose to the thyroid is 20 REM.	Recommends full evacuation of Sectors SSW/SW/WSW/W-1 through 10.
	4:00 PM	Wind begins to shift counter-clockwise. Exercise secures in Calvert and St. Mary's Counties.	Notifies EOC's and AAC of wind change.
	4:30 PM	Wind steadies on bearing 250°. Projected dose rate at Taylor's Island is 500mR/hr. Projected dose to the thyroid is 20 REM.	Recommends full evacuation of Sectors NE/ENE/E-7 through 10.
	6:00 PM	Plant reestablishes cooling to reactor core and begins controlled cooldown of damaged unit.	Notifies Dorchester and State EOC's and AAC of plant status.
	6:30 PM	Radioactivity release rate has decreased substantially. Dose rate in center of the plume near the plant is 100 mR/hr.	Notifies Counties, State, as above.

<u>EMERGENCY CONDITION</u>	<u>TIME</u>	<u>EVENT</u>	<u>PLANT EXPECTED ACTION</u>
SITE EMERGENCY	7:30 PM	Radioactive leak to atmosphere completely stopped.	Notifies County and State of change in plant status.
		Dose rate in center of plume on Taylor's Island is 50 mR/hr.	Recommends return to evacuated sectors.
NONE	8:00 PM	Exercise is concluded.	