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10CFR50, Appendix E

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Subject: Limerick Generating Station, Units 1 & 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

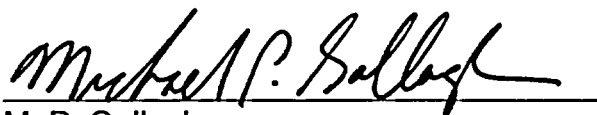
EP-LG-112-500, Revision 0, "Emergency Environmental Monitoring"

Enclosed is a revised Emergency Plan Procedure for Limerick Generating Station (LGS), Units 1 and 2. This procedure is required to be submitted within thirty (30) days of its revision in accordance with 10CFR50, Appendix E, and 10CFR50.4.

Also, enclosed is a copy of the computer generated report index identifying the latest revisions of the LGS procedures.

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,



M. P. Gallagher
Director - Licensing & Regulatory Affairs
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Enclosures

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A045

ENCLOSURE 1

LIMERICK GENERATING STATION, UNITS 1 & 2

**Docket Nos. 50-352
50-353**

**License Nos. NPF-39
NPF-85**

EMERGENCY RESPONSE PROCEDURE

**EP-LG-112-500, "Emergency Environmental Monitoring,"
Revision 0**

EMERGENCY ENVIRONMENTAL MONITORING**1. PURPOSE**

- 1.1 This procedure describes the responsibilities and actions for the coordination of Exelon Nuclear Field Monitoring Teams, including the tracking of a radiological release plume and the collection of environmental samples.

Field Monitoring Teams are mobilized and initially dispatched by the Radiation Controls Coordinator in the Technical Support Center (TSC). Coordination of Field Monitoring Team activities are transferred to the Environmental Coordinator upon activation of the Emergency Operations Facility (EOF).

2. TERMS AND DEFINITIONS

None

3. RESPONSIBILITIES

- 3.1 Field Monitoring Teams are responsible for performing field surveys outside the Station Protected Area, including tracking of the radiological release plume and obtaining environmental samples, as trained.

4. MAIN BODY

- 4.1 **INITIATE** the appropriate Emergency Plan activities using the Field Monitoring Team Checklist listed in Attachment 1, when designated as a Field Monitoring Team member.

5. DOCUMENTATION

None

6. REFERENCES

None

7. **ATTACHMENTS**

- 7.1 Attachment 1, Field Monitoring Team Checklist
- 7.2 Attachment 2, Protective Equipment and Personnel Dosimetry
- 7.3 Attachment 3, Field Monitoring Team Data Sheet
- 7.4 Attachment 4, Environmental Assessment Log
- 7.5 Attachment 5, Environmental Sample Collection Procedures
- 7.6 Attachment 6, Environs Group Transfer or Shipment of Environmental Radiological Samples to Radiological Laboratories
- 7.7 Attachment 7, Mobilization and Direction of the Environmental Sampling Vendor
- 7.8 Attachment 8, Satellite Telephone Operation (Mid-West ROG Only)
- 7.9 Attachment 9, Field Monitoring Team Radio Operating Guidelines (TMI Only)

ATTACHMENT 1**FIELD MONITORING TEAM CHECKLIST**

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Mid-Atlantic ROG

Collection of environmental samples, other than plume survey and airborne samples is performed by an Environmental Sampling Vendor (ESV).

Section 1, Initial Actions

Section 2, On-Going Activities

NOTE: Steps in this checklist may be performed in an order other than listed or they may be omitted if not applicable.

1. INITIAL ACTIONS

REPORT to the OSC after facility activation is directed, and **PERFORM** the following if designated as a Field Monitoring Team members:

- 1.1 ☐ **OBTAIN** a vehicle and keys for equipment storage areas, as applicable.
- 1.2 ☐ **PERFORM** the actions outlined in Table 1-1, "Initial Field Monitoring Team Checklist".
- 1.3 ☐ **REPORT** to the TSC or **CONTACT** the Radiological Controls Coordinator (RCC) from a pre-designated location (i.e., OSC, vehicles, equipment area, etc.) for an initial briefing using Table 1-2 (Field Monitoring Team Dispatch Log).
- 1.4 ☐ **DON** appropriate protective clothing and dosimetry, as directed by the RCC per Attachment 2 (Field Monitoring Team Protective Equipment and Personnel Dosimetry).

- 1. If respiratory protection is recommended, but is not part of equipment inventory, then **OBTAIN** from RP.

The following ALARA considerations apply:

- Field Monitoring Teams should take and report dose rates upon arrival to the monitoring location. If habitable, sampling should proceed as instructed.
- Field Monitoring Teams should request further instructions when radiation levels approach 100 mR/hr.

- 1.5 ☐ **PROCEED** to designated staging area or off-site location and **CONTACT** the RCC upon arrival.

ATTACHMENT 1**FIELD MONITORING TEAM CHECKLIST**

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2. ON-GOING ACTIONS

NOTE: Actions are not required to be performed in the order listed.

CAUTIONS

When traversing a potential release path, vehicle windows and ventilation paths (i.e., air conditioning, vent fan) shall be closed or secured except when performing measurements or taking air samples. Consider hazards in terrain when choosing location to stop vehicle.

Use roof top strobe light or vehicle flashers whenever you are stopped along roadside or traveling significantly slower than the speed limit.

- 2.1 **USE** "3-Way" communications principles and phonetic alphabet (Table 1-3) for all communications to and from controlling facility and Field Monitoring Team.

Mid-West ROG only

REFER to communications equipment instructions provided in Attachment 8.

- 2.2 **PERFORM** radiation surveys while in transit to specified survey location or deployment point.

CAUTION

(Unless instructed otherwise) If radiation levels approach 100 mR/hr, **then STOP** and **RETURN** to a lower dose area. **NOTIFY** the controlling facility (TSC/EOF) immediately for further instructions.

1. **OBSERVE** instruments for changes above background levels, and **NOTIFY** the RCC (TSC) / Field Team Communicator (EOF) of any noticeable increases in levels (> 1 mR/hr).
2. **NOTIFY** the RCC (TSC) / Field Team Communicator (EOF) upon arrival at specified survey location or deployment point.

ATTACHMENT 1**FIELD MONITORING TEAM CHECKLIST**

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2.3 When directed to traverse plume, **PERFORM** the following:

1. If required to obtain an air sample, then **PREPARE** for sample in advance.
 - A. **CHECK** portable air sampler for particulate filter and silver zeolite cartridge, and **INSTALL** if necessary (checking the direction of air flow, marking the "hot-side" of the filter, and ensuring gaskets are in place).
 - B. **DON** protective clothing, as directed
 - **REFER** to EP-AA-113, Attachment 3 (Emergency Radiation Exposure Limits and Associated Risks)
 - **REVIEW** the KI Package Insert in EP-AA-113, Attachment 6 if the use of potassium iodide (KI) is authorized.
2. **TRAVERSE** the expected release plume recording the following information on Attachment 3 (Field Survey Data Sheet):

NOTE: A good indication of being in the plume is when the measured window open reading is significantly greater than the window closed reading.

- Team No. (Color)
 - Date / Time
 - Initial plume boundary dose rate and location
 - Plume centerline (highest reading) dose rate and location
 - Exiting plume boundary dose rate and location
3. If directed, **OBTAIN** an air sample and required surveys at the plume centerline in accordance with Radiation Protection (RP) guidelines. **RECORD** information on an Environmental Assessment Log (Attachment 4)
 - A. **OBTAIN** radiation readings at approximately 6 inches and 3 feet from the ground in both the window open and window closed positions
 - B. **PLACE** air sampler at location, positioned with inlet facing towards the station and approximately 3 feet above the ground

ATTACHMENT 1**FIELD MONITORING TEAM CHECKLIST**

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NOTE: If obtaining an air sample in a high dose area, a air sampler run time may be reduced with authorization from the controlling facility.

- C. **SET** sampler flow at 3 cfm and **RUN** for approximately 10 minutes to obtain at least a 30 ft³ volume air sample.

Limerick only

SET up air sampler and ensure proper volume is obtained.

Peach Bottom only

SET air sampler flow rate based on instruction guidelines and **OBTAIN** a 12 ft³ volume air sample.

TMI only

Using the sampler's self-timer (or stopwatch / wristwatch), **DRAW** approximately a 300-liter air sample.

NOTE: Samplers with adjustable flow rate should be set to the highest flow rate possible, not to exceed 50 lpm (1.8 cfm).

- D. **MOVE** to a low background area (less than 200 cpm or per RP guidelines).

NOTE: Personnel performing the sampling tasks should wear gloves, at a minimum, to prevent contamination.

4. **Upon exiting plume,** **PERFORM** the following:

- A. **RUN** air sampler per RP guidelines to purge unit of noble gases.
- B. **REMOVE** the air sample cartridge and **SURVEY** both the prefilter and iodine cartridge. **RECORD** information on an Environmental Assessment Log (Attachment 4).
- C. **CONTACT** the controlling facility and **REPORT** information recorded on Attachments 3 and 4.

ATTACHMENT 1**FIELD MONITORING TEAM CHECKLIST**

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- 2.4 **REPORT** exposure history, as requested, and frequently **CHECK** dosimeter readings to ensure individual dose limits will not be exceeded.
- 2.5 **PERFORM** additional plume surveys as directed.

MWROG Only

- 2.6 **COLLECT** environmental samples (i.e., water, soil, vegetation, etc.) as directed per Attachment 6 (Environmental Sample Collection Procedures).

- 2.7 When directed, **RETURN** to the Station or the EOF, as directed:
- 2.7.1 ____ **REPORT** final dosimeter readings to the controlling facility
- 2.7.2 ____ **ENSURE** that all samples are packaged and labeled appropriately.
- 2.7.3 ____ **DELIVER** samples and completed data sheets to the Station Chemistry Lab or to designated EOF location, as applicable.
- 2.7.4 ____ **SURVEY** vehicle and all team members for contamination, and **REPORT** to a decontamination location designated by the EOF if contamination is present.
- 2.7.5 ____ **INVENTORY** equipment kit and **RESTOCK**, if possible. **REPORT** any deficiencies to the EOF.
- 2.7.6 ____ If being relieved, then **COMPLETE** Table 1-4 (Field Monitoring Team Turnover Checklist) with on-coming personnel.

ATTACHMENT 1

FIELD MONITORING TEAM CHECKLIST

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TABLE 1-1
INITIAL FIELD MONITORING TEAM CHECKLIST
Page 1 of 1

Date: ___/___/___ Team Designation _____

- ☐ (1) **OBTAIN** equipment kits and instruments.
 – If seal on equipment kit is broken, then **OBTAIN** a sealed kit or **PERFORM** an inventory.
- ☐ (2) **VERIFY** operability of meters, air samplers, and battery-operated equipment.
 – When using ion chamber-type instrumentation in a suspected noble gas environment, completely seal the ion chamber in plastic.

INSTRUMENT TYPE	SERIAL NO.	CAL. DUE	BATTERY CHECK (✓)	RESPONSE CHECK (✓)

- ☐ (3) **OBTAIN** vehicle and keys for Field Monitoring Team use.
- ☐ (4) **CHECK** gas tank level (at least ½ full).
- ☐ (5) **PERFORM** a communications check over designated channel / frequency

<u>Mid-West ROG</u>	<u>Limerick</u>	<u>Peach Bottom</u>	<u>TMI</u>
REFER to Attachment 8 of EP-AA-112-500	Channel 1 – TSC / EOF Channel 2 – Other teams	EP Channel	Environmental & Radiological Freq.

- ☐ (6) **PERFORM** a visual inspection of the vehicle.
- ☐ (7) **DON** low and high range dosimetry, if provided in kit.
- ☐ (8) **VERIFY** that team members have Exelon Nuclear identification.
- ☐ (9) **REPORT** any vehicle and/or equipment problems to the TSC Radiation Controls Coordinator.

Comments / Equipment Discrepancies:

Leader: _____ /___/___

Driver: _____ /___/___

ATTACHMENT 1**FIELD MONITORING TEAM CHECKLIST**

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Table 1-2

FIELD MONITORING TEAM DISPATCH LOG

Page 1 of 1

A. Assignment of Team Personnel:

	TEAM COLOR	MEMBER NAMES	CURRENT DOSE (QTR* / YEAR)	DOSE APPROVED TO	KI ISSUED (YES / NO)	INITIAL LOCATION
TEAM 1			/			
			/			
TEAM 2			/			
			/			

* Applicable to MWROG Stations

B. Briefing of Conditions:

Current Classification: UNUSUAL EVENT / ALERT / SITE AREA EMERGENCY / GENERAL EMERGENCY

Plant Conditions: HOT SHUTDOWN / COLD SHUTDOWN / NOT SHUTDOWN

DETERIORATING / STABLE / IMPROVING

Affected Sectors/Subareas: _____ Wind Direction: _____

Wind Speed: _____ mph

Release Potential: NONE / OCCURRING / TERMINATED

Release Type: ELEVATED / GROUND MONITORED / UNMONITORED

IODINE / NOBLE GAS / PART.

Projected Doses: (mRem/hr) 2 Mile 5 mile 10 Mile

Turnback Dose: _____ mRem

Whole Body _____

Thyroid _____

Completed: (Team _____) / (Team _____)

ATTACHMENT 1

FIELD MONITORING TEAM CHECKLIST

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TABLE 1-3
PHONETIC ALPHABET
Page 1 of 1

A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	Indigo	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

NOTE: Alternate listing identified in approved station procedures / guidelines may also be used.

ATTACHMENT 1

FIELD MONITORING TEAM CHECKLIST

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TABLE 1-4

FIELD MONITORING TEAM TURNOVER CHECKLIST

Page 1 of 1

TEAM: _____ DATE / TIME: _____

A. Meteorological Conditions: Wind Speed _____

Wind Direction _____

B. Radiological Conditions: _____

C. Equipment Status: _____

D. Supply Inventory Status: _____

E. Road Conditions: _____

F. Other: _____

ATTACHMENT 2
PROTECTIVE EQUIPMENT AND PERSONNEL DOSIMETRY
Page 1 of 2

The purpose of this Attachment is to provide guidance to the TSC Radiation Controls Coordinator or EOF Environmental Coordinator with respect to the wearing of protective clothing by Field Monitoring Teams and to specify the dosimetry requirements for those teams.

Respiratory protective equipment and radiological protective clothing should be inspected for proper function before use in the field and may need to be obtained from RP if not part of field team equipment inventory.

Radiological protective clothing should only be worn at the direction of the TSC Radiation Controls Coordinator or EOF Environmental Coordinator.

The MSA combination cartridge for use in both airborne radioactive iodine and particulate atmospheres has a protection factor of 100 for particulates and 1 for radioiodine. The lack of an approved protection factor for iodine should not prevent the use of these cartridges in atmospheres when both radioactive airborne particulates and iodines exist.

1. PROTECTIVE EQUIPMENT AND PERSONNEL DOSIMETRY

1.1 DIRECT each Field Monitoring Team member to obtain:

1. TLD
2. Self-reading dosimeters within the following ranges:

<u>MAROG</u>	<u>MWROG</u>
<ul style="list-style-type: none">• 0-1500 mR range• 0-5 R range	<ul style="list-style-type: none">• 0-200 mR range• 0-1 R range• 0-10 R range

OR

Electronic dosimeter capable of same coverage

NOTE: Dosimetry, other than TLDs, can be expected to under-report the actual dose (TEDE) received by a factor of 2 when immersed in a noble gas plume.

ATTACHMENT 2
PROTECTIVE EQUIPMENT AND PERSONNEL DOSIMETRY
Page 2 of 2

- 1.2 **EVALUATE** the magnitude and type of any possible release in order to determine protective equipment use.

1.2.1 Respiratory Protection:

CAUTION

Respirators should be used only as a precautionary measure until air samples have been collected and analyzed, when a high dose field is encountered. The long-term use of a full-face respiratory or SCBA is **NOT** recommended due to the safety hazard involved in operating vehicle.

1. **EVALUATE** the use of respiratory protection as it affects the TEDE of Field Monitoring Team personnel.
2. **DETERMINE** whether affected personnel are respirator qualified.
3. **USE** a full-face respirator only when it is beneficial to TEDE AND the sufficient priority exists for sample collection.

1.2.2 Protective Clothing:

1. **ASSESS** the likelihood of particulates in the release.
2. **ASSIGN** a full set of protective clothing when particulates or residual contamination is expected.
3. **USE** EP-AA-113, Attachment 5, to assess the need for thyroid blocking agents.

ATTACHMENT 3
FIELD MONITORING TEAM DATA SHEET
 Page 1 of 1

NOTE: Ion Chambers should be used above 2 mR/hr, and GM detectors should be used below 2 mR/hr, as applicable based on equipment inventory.

TRAVERSE #1 TEAM: _____ DATE / TIME: _____

PLUME TRAVERSE (A)	LOCATION (B)	DOSE RATE (mR/hr)	
		OPEN (C)	CLOSED (D)
(1) Initial Boundary			
(2) Centerline (Highest)			
(3) End Point (Boundary)			

Dosimeter Reading -- _____

TRAVERSE #2 TEAM: _____ DATE / TIME: _____

PLUME TRAVERSE (A)	LOCATION (B)	DOSE RATE (mR/hr)	
		OPEN (C)	CLOSED (D)
(1) Initial Boundary			
(2) Centerline (Highest)			
(3) End Point (Boundary)			

Dosimeter Reading -- _____

TRAVERSE #3 TEAM: _____ DATE / TIME: _____

PLUME TRAVERSE (A)	LOCATION (B)	DOSE RATE (mR/hr)	
		OPEN (C)	CLOSED (D)
(1) Initial Boundary			
(2) Centerline (Highest)			
(3) End Point (Boundary)			

Dosimeter Reading -- _____

Numbers and letters are for assistance in communicating data if desired

ATTACHMENT 4
ENVIRONMENTAL ASSESSMENT LOG
Page 1 of 1

Event Date (1)		Affected Station (2)				Team (3)	
NO. (4)	Location (5)	Time (6)	3ft WO (7)	3ft WC (8)	6in WO (9)	6in WC (10)	Instructions
(A)							
(B)							
(C)							
(D)							
(E)							
(F)							
(G)							
(H)							
(I)							
(J)							

Air Samples:

Collection Location (11)	Time Sampler Started (12)	Sampler Run Time, in min (13)	Sampler Flow Rate (14)	Background Rate, in cpm (15)	Gross Prefilter Results, in cpm (16)	Gross Zeolite Results, cpm (17)
(K)			cfm / lpm			
(L)			cfm / lpm			
(M)			cfm / lpm			

Other Samples:

Collection Location (18)	Collection Time (19)	Sample Type (20)	Counting Location (21)	Time Counted (22)	Background Rate, cpm (23)	Gross Sample Results, cpm (24)
(N)						
(O)						
(P)						

Numbers and letters are for assistance in communicating data, if desired

ATTACHMENT 5**ENVIRONMENTAL SAMPLE COLLECTION (MID-WEST ROG)**

Page 1 of 4

MWROG Only

The purpose of this Attachment is to describe the proper methods for collecting, handling and packaging of radiological environmental samples.

Section 1, General Sampling Guidance

Section 2, Water Sampling

Section 3, Soil Sampling

Section 4, Vegetation Sampling

Section 5, Snow Sampling

1. GENERAL SAMPLING GUIDANCE

- 1.1 In general air samples and dose rates are used when tracking the plume. The snow, water, vegetation and soil samples will be taken after the plume has stopped.
- 1.2 If milk samples are requested by offsite agencies, then **COLLECT** a minimum of one gallon.
- 1.3 **TREAT** samples with survey results of greater than or equal to 0.5 mR/h, or a count rate of 2500 cpm measured on a GM-type instrument as "radioactive material" for transportation and shipping, per 49 CFR 173.421(a)(2). Such samples require the completion of radioactive material shipping documents.
- 1.4 **TAKE** all samples to, or as near as possible, to the designated monitoring locations. If samples are taken at locations other than those points, report the monitoring location and record it in the 'comments' section on the Environmental Assessment Log.
- 1.5 **TAKE** samples from an undisturbed area, which is suspected to be contaminated and obtain a representative sample.
- 1.6 **LABEL** each container with the following:
 - team name,
 - sample type,
 - chronological sample number,
 - date, time, and monitoring location,

ATTACHMENT 5**ENVIRONMENTAL SAMPLE COLLECTION (MID-WEST ROG)****Page 2 of 4**

- for air samples; initial air sampling flow rate, final air sampling flow rate, initial running time, final running time, total cubic feet (usually 30 cubic feet),
- sample results, and
- other information pertinent to analysis.

1.7 **RECORD** data on the Environmental Assessment Log (Attachment 3), or similar log

2. **WATER SAMPLING**

2.1 **Stream, River or Lake water sampling** (sample size: 1 gallon)

2.1.1 **RINSE** collection container several times before collecting water if container was used previously.

2.1.2 **OBTAIN** a sample that is representative of the water source without disturbing the sediment.

2.1.3 If sampling is to be performed from a bridge, **LOWER** the sampling pail on a rope into the stream on the upstream side of the bridge. Permit the pail to sink beneath the surface and **RETRIEVE** the pail full of water.

2.1.4 **TRANSFER** the sample into the sample container and **CLOSE** tightly. Wipe the outside of the container and **PLACE** a completed label on the container. **PLACE** the labeled sample container in a clean plastic bag and seal tightly.

2.2 **Well water samples** (normal sample size: 1 gallon)

2.2.1 **PURGE** the well or fountain by allowing the water to flow for at least two minutes to assure that a representative sample is collected.

2.2.2 **FILL** the plastic sample container and **CLOSE** tightly. **WIPE** the outside of the container and **PLACE** a completed label on the container. **PLACE** the labeled sample container in a clean plastic bag and seal tightly.

ATTACHMENT 5**ENVIRONMENTAL SAMPLE COLLECTION (MID-WEST ROG)**

Page 3 of 4

3. SOIL SAMPLES

- 3.1 Soil samples should be free of vegetation and/or rocks and obtained from a small, flat area. Permanent pastures are the preferred sampling sites if available. Avoid obtaining soil samples from freshly plowed fields. (Normal sample size: quantity sufficient to fill 1 quart plastic cube container) **REPORT** back if soil is unsuitable.

3.1.1 From a one-foot square area. **SCRAPE** soil from within the square, not exceeding a depth of one inch, and store in the sample container.

NOTE: Maximize collection of the upper most soil area.

3.1.2 **IDENTIFY** sampling area with sample point flag or fluorescent spray paint. Information on the exact location, nature of terrain, vegetation cover, nearby trees, etc., should also be noted.

3.1.3 **FILL** the plastic container, **CLOSE**, and **PLACE** a completed label on the container. **PLACE** the labeled sample container in a clean plastic bag and **SEAL** tightly.

4. VEGETATION SAMPLES

- 4.1 **COLLECT** the leafy portion of pasture-type grass only. Weeds and other types of vegetation are discouraged. (sample size: quantity sufficient to fill 1 quart plastic cube container, packed tightly, or other appropriate size container)

NOTE: New vegetation growth is desirable; do not sample dried grass.

4.1.1 **NOTIFY** Environmental Coordinator if vegetation is limited.

4.1.2 **IDENTIFY** sampling area with sample point flag or fluorescent spray paint.

4.1.3 **FILL** the plastic container, **CLOSE**, and **PLACE** a completed label on the container. **PLACE** the labeled sample container in a clean plastic bag and **SEAL** tightly.

ATTACHMENT 5**ENVIRONMENTAL SAMPLE COLLECTION (MID-WEST ROG)**

Page 4 of 4

5. SNOW SAMPLES

NOTE: Snow Sampling is dependent on weather conditions and proper site selection. Areas where the wind has swept away snow cover, drifting has occurred; or the snow has been disturbed by outside sources (plowing, snow mobiles, etc.) should be avoided.

- 5.1 **LINE** the bucket with a plastic bag. If a bucket is unavailable, a representative sample may be obtained by filling a 1 quart container 12 times and placing the sample in a plastic bag.

NOTE: Sample volume should exceed 1 liter of melted snow or approximately 3 gallons of packed snow.

- 5.2 **PACK** lined bucket with snow taken from selected area:

1. If a crust layer remains from an earlier snow, then **COLLECT** snow from surface to crust layer.
2. If snow has fallen after release, then **COLLECT** crust layer and loose snow next to crust layer, sweeping away new fallen snow.
3. If unsure of the time it snowed, then **COLLECT** snow closest to ground level.

- 5.3 **SEAL** sample bag securely, **PLACE** sample inside another plastic bag and **SEAL** tightly.

- 5.4 **MEASURE** area sampled in square feet and depth in inches.

- 5.5 **IDENTIFY** sampling area with sample point flag or fluorescent spray paint.

- 5.6 **PLACE** a completed label on double bagged sample and **PLACE** in a (third) clean plastic bag; **SEAL** tightly for storage.

- 5.7 **RECORD** any unusual features or terrain information on the back of the Environmental Assessment Log (Attachment 3).

**ATTACHMENT 6 (MID-WEST ROG)
ENVIRONS GROUP TRANSFER OR SHIPMENT OF ENVIRONMENTAL
RADIOLOGICAL SAMPLES TO RADIOANALYTICAL LABORATORIES**

Page 1 of 4

MWROG Only

This Attachment describes the methods to be used to transfer or ship environmental samples to a counting laboratory. Environmental samples shall be collected and packaged as described in EP-AA-112-500, Attachment 5, if the conversion factors supplied in this procedure are to be used when determining shipping requirements.

Personnel transporting environmental samples should have completed an Exelon Nuclear equivalent radiation worker training program.

Ensure samples are appropriately labeled with Field Monitoring Team Identification, sample volume, sample location, and sample date and time.

Personnel handling environmental sampling shall wear specified dosimetry and protective clothing, as appropriate.

Caution should be exercised when handling environmental samples to limit the spread of contamination and maintain personnel exposure ALARA.

Consult with appropriate Federal Regulatory Agencies and offsite Agencies to determine whether the steps of this procedure apply, in situations where high contamination are found in the environment, consider requesting exemptions from shipping requirements in order to expedite critical analyses.

Dose rate measurements of the sample containers should be performed in an area where background is less than 100 cpm on a GM instrument (<0.1 mR/hr).

Sample measurements exhibiting an exposure level of greater than 0.5 mR/hr when using an ion chamber device or 2,500 cpm on a GM instrument shall be classified as radioactive material for shipment purposes. All calculations for shipping assume the environmental mix is all radioactive iodines.

Section 1; Sample Transfer and Shipment

Table 6-1, Sample Data - Used as Basis Document for determination of average sample weights and specific activity. Not required by procedure user.

Table 6-2, Direction to Radiological Environmental Contractor

**ATTACHMENT 6 (MID-WEST ROG)
ENVIRONS GROUP TRANSFER OR SHIPMENT OF ENVIRONMENTAL
RADIOLOGICAL SAMPLES TO RADIOANALYTICAL LABORATORIES**

Page 2 of 4

1. SAMPLE TRANSFER AND SHIPMENT

1.1 Field Monitoring Team Personnel

- 1.1.1 PERFORM** a contamination survey on the exterior of the sample container.
- 1.1.2 DECONTAMINATE** the container (or change containers) until exterior surfaces are free of detectable radioactive contamination.
- 1.1.3 PERFORM** an exposure rate survey using an ion chamber device or instrument of similar sensitivity at the center for the sample of interest. **REPORT** survey results to the Environmental Coordinator.

1.2 Environmental Coordinator or Staff

- 1.2.1** If no detectable exposure level exists, shipping requirements do not apply.
 - **CONTACT** the radiological environment contractor and **CONFIRM** any special handling requirements and contractor's readiness to receive samples.
 - **INSTRUCT** the Field Monitoring Team or runner to transfer samples to the laboratory. Directions are found in Table 6-2.
- 1.2.2** If detectable exposure levels exist, shipping requirements apply.
 - **CALCULATE** the curie content of each shipping package in accordance with the station shipping procedures.
 - **COMPLETE** required shipping papers in accordance RP-AA-600.
 - **INSTRUCT** Environs Team or runner on sample shipment requirements. Directions to the laboratory are found in Table 6-2.

**ATTACHMENT 6 (MID-WEST ROG)
 ENVIRONS GROUP TRANSFER OR SHIPMENT OF ENVIRONMENTAL
 RADIOLOGICAL SAMPLES TO RADIOANALYTICAL LABORATORIES**

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**TABLE 6-1
 SAMPLE DATA**

Page 1 of 1

A. Grass Sample

Trial	Tare Wt (gm)	Gross Wt (gm)	Net Wt (gm)
1	91.33	144.13	72.80
2	71.33	137.27	65.94
3	71.33	128.17	56.84
4	71.33	136.43	65.10
5	71.33	133.01	61.68
6	70.07	136.43	61.36

n = 6

x = 63.95 gms

s = 5.40 gms

B. Dirt Samples

Trial	Tare Wt (gm)	Gross Wt (gm)	Net Wt (gm)
1	71.33	1027.87	956.54
2	71.33	910.43	847.10
3	71.33	1007.31	935.98
4	70.07	979.88	909.81
5	70.07	962.11	892.11
6	70.07	1007.74	937.67

n = 6

x = 913.19 gms

s = 39.56 gms

C. Water Samples (Gallon Container)

Trial	Tare Wt (gm)	Gross Wt (gm)	Net Wt (gm)
1	75.08	4280	4205
2	75.08	4235	4160
3	75.08	4230	4155
4	75.08	4215	4140
5	75.08	4250	4175
6	74.28	4225	4151
7	74.28	4200	4206
8	74.28	4285	4211
9	74.28	4285	4211
10	74.28	4310	4236

n = 10

x = 4185 gms

s = 33 gms

n = Number of Trials

x = Average Weight (gm)

s = Standard deviation of the sample

**ATTACHMENT 6 (MID-WEST ROG)
ENVIRONS GROUP TRANSFER OR SHIPMENT OF ENVIRONMENTAL
RADIOLOGICAL SAMPLES TO RADIOANALYTICAL LABORATORIES**

Page 4 of 4

TABLE 6-2

Directions To Radiological Environmental Contractor Teledyne Isotopes

Page 1 of 1

Teledyne Isotopes
700 Landwehr
Northbrook, IL 60062

8 a.m. - 5:45 p.m.

- From I-294 (Tri-State Tollway) South: Exit east (right) on Willow Road. Proceed to Landwehr and turn north (left). Follow Landwehr past Dundee Road. Teledyne is located 1 and 1/2 blocks north of Dundee on the west (left) side.
- From I-94 North. Exit west (left) on Dundee Road. Proceed to Landwehr and turn north (right). Teledyne is located 1 and 1/2 blocks north of Dundee on the west (left) side.
- From US-41 South. Exit west (right) on Lake-Cook Road. Proceed to US-43 and turn south (left). Go to Dundee and turn west (right). Proceed to Landwehr and turn north (right); Teledyne is located 1 and 1/2 blocks north of Dundee on the west (left) side.
- From I-55 South. North on I-294 (Tri-State Tollway). I-294 to Willow Road exit, go east (right) on Willow Road. Proceed to Landwehr and turn north (left). Follow Landwehr past Dundee Road. Teledyne is located 1 and 1/2 blocks north of Dundee on the west (left) side.
- From I-88 East, North on I-294 (Tri-State Tollway). I-294 to Willow Road exit, go east (right) on Willow Road. Proceed to Landwehr and turn north (left). Follow Landwehr past Dundee Road. Teledyne is located 1 and 1/2 blocks north of Dundee on the west (left) side.

ATTACHMENT 7**MOBILIZATION AND DIRECTION OF ENVIRONMENTAL
SAMPLING VENDOR (MID-ATLANTIC ROG)**

Page 1 of 2

Mid-Atlantic ROG**PART 1: MOBILIZATION**

This attachment describes the process for contacting and coordinating the collection environmental samples through the contracted REMP Environmental Sampling Vendor (ESV).

1. _____ **CONTACT** the ESV, using the ERF Telephone Directory, and **INFORM** them of a potential for a radiological release.
2. _____ **ESTABLISH** a communication protocol between the Environmental Coordinator (EOF) and the ESV.
3. _____ **DIRECT** the ESV to prepare for a radiological release, and **PROVIDE** them the following information:
 - Affected Site
 - Wind Direction / Speed
 - Radiological Release Status
 - Anticipated Time of Release

NOTE: Per their procedure, the ESV will contact the REMP radiological analytical laboratories and TLD vendor.

4. _____ **OBTAIN** from the ESV a list of names of individuals who will be traveling in the EPZ to be provided to the State Police and Security Coordinator.
5. _____ **If available, then DIRECT** ESV to pick up electronic dosimetry and place in field as part of Step 6.7
NOTE: Steps 6 & 7 should be performed starting with the down wind, affected sectors and then to other sectors.
6. _____ **DIRECT** the ESV to begin placing air pumps at the sites.
7. _____ **PLACE** the emergency air pumps in service.
8. _____ When the above steps are completed or if offsite radiological conditions change, **DIRECT** the ESV to relocate to an upwind distance and await further instructions.

ATTACHMENT 7**MOBILIZATION AND DIRECTION OF ENVIRONMENTAL
SAMPLING VENDOR (MID-ATLANTIC ROG)**

Page 2 of 2

Mid-Atlantic ROG**PART 2: RECOVERY PHASE**

1. _____ **EVALUATE** offsite dose, and as appropriate, **REQUEST** Exelon Nuclear Radiation Protection (RP) support from the EOF Radiation Protection Manager for the ESV.

2. _____ **DIRECT** the ESV to collect the following samples, as appropriate:

a. _____ Air particulate and iodine samples from all air sampling equipment

NOTE: At each REMP sampling location, there are two (2) TLDs. One (1) TLD may be removed, but only if it is being replaced. The 2nd TLD must remain until the end of the sampling quarter.

b. _____ Electronic dosimetry or TLDs

c. _____ Milk

d. _____ Vegetation

e. _____ Water

f. _____ Soil

3. _____ **DETERMINE** an appropriate sample delivery staging area.

4. _____ **REQUEST** Exelon Nuclear support from the EOF Radiation Protection Manager for radioactive shipping expertise.

ATTACHMENT 8

SATELLITE TELEPHONE OPERATIONS (Mid-West ROG)

Page 1 of 2

Mid-West ROG

The satellite phone system provides phone communication and two-way radio coverage. This system provides clarity and security to assure private communications through an all-digital network.

Each satellite phone includes a handset for phone conversations and a push-to-talk (PTT) microphone for radio communications. All Field Survey Team communicators will use the PTT

Powering On Unit:

1. **PRESS** and **HOLD** the PWR key on either PTT or telephone handset to power on the Mobile Terminal (MT).

NOTE: If you power on the unit using the telephone handset, the PTT display will read **SLEEP**. To activate PTT, **PRESS** and **HOLD** any key on the PTT keypad (except PWR or BAR).

2. If using a land mobile unit, remain stationary until the satellite has been acquired and the service is ready to use.
3. You will see **NO SVC** in the upper right corner of the PTT display. Within 20 seconds to one minute, your MT should be locked on the satellite; **NO SVC** will disappear from the display and you will be ready to use the service. If the **NO SVC** display does not disappear after 1 minute, push the * key and wait 20 seconds. Repeat, if necessary.

ATTACHMENT 8**SATELLITE TELEPHONE OPERATIONS (Mid-West ROG)**

Page 2 of 2

Mid-West ROG**Initiating a Radio Call:**

1. **PRESS** and **HOLD** the PTT. When the display reads **SELF** you will hear a two-tone beep. You can begin talking, holding mic approximately two inches from your mouth.

NOTE: **WAIT** until **SELF** is displayed before speaking to avoid having your voice cut off.

2. **RELEASE** the PTT when finished speaking and the display will change to **VACANT**, accompanied by a single beep. Someone can now respond to you.

NOTE: **VACANT** means that the talk group is still active and anyone can now become the speaker.

- When someone in the talk group responds, you will see their unique four-digit Directory Number (DN) appear on the PTT display. When they stop talking, the DN will be replaced by **VACANT**.

3. You can respond to a communication as soon as you see **VACANT** on your display. To respond, simply **PRESS** and **HOLD** the PTT. When **SELF** is displayed, you may begin speaking. Release PTT when finished speaking.

NOTE: A talk group will remain in the **VACANT** state for 10 seconds if another user does not PTT. After 10 seconds in the **VACANT** state the call will be terminated.

When **IDLE** is displayed it means the talk group has stopped. You must follow the steps for initiating a radio call to re-establish communications on the talk group.

The cue that the talk group is available - **VACANT** - is always accompanied by a single beep. The cue that you may speak - **SELF** - is always accompanied by a two-tone beep. Once users become accustomed to the service they can navigate usage through audio tones without relying on the PTT display.

ATTACHMENT 9**Field Monitoring Team Radio Operating Guidelines (TMI Only)**

Page 1 of 2

TMI Station

This attachment provides guidance on the operation of the station radio frequency to support communications with field monitoring team personnel.

- A. **TURN ON** the portable radio by rotating the “power on-off / volume” knob clockwise.

The radio will perform a “power up self test” and then display”:

- Its unit number (e.g., “TMI P 1” is portable radio #1), and
- Either “EARS” or “CC SCAN” depending on whether the radio is receiving the system Control Channel signal (i.e., if “CC SCAN” appears, the radio is out of range or in a bad location).

- B. To Transmit:

1. **VERIFY** that “EARS” is displayed on the front of the radio and then **PRESS** the Push-To-Talk (PPT) button (elongated button on the left side of the radio).
2. When a short, medium pitch beep is heard, **BEGIN** speaking.

- If a high pitch beep is heard when the PPT button is pressed, then the system is temporarily busy. **NO NOT** release the PPT button, but rather continue pressing it and wait for the short medium pitch beep before starting to speak. The delay should typically be not more than a few seconds.

3. When speaking, **HOLD** the radio approximately 3 inches from the mouth and **SPEAK** in a normal voice.

- C. Receiving:

- When a call is being received, the calling station’s identification is displayed in the upper line of the radio’s display.

ATTACHMENT 9**Field Monitoring Team Radio Operating Guidelines (TMI Only)****Page 2 of 2****D. System Status Beeps:**

The radio will indicate system status by emitting any of several beeps:

- A short medium pitch beep indicates that the radio has begun to transmit and the user may begin to speak.
- A high pitch beep indicates that all system channels are busy and the radio is waiting for the next available channel. The user should continue pressing the PPT button until a short medium pitch beep is heard and then begin speaking.
- If five short high pitch beeps are heard while transmitting, this indicates that the radio is approaching its 60-second transmission length limit. Unless the radio is unkeyed before the long low pitch is heard, the radio will stop transmitting and information will be missed. Long transmissions should be broken into several shorter transmissions to avoid this.
- A low pitch beep simultaneous with the appearance of a battery icon in the lower right corner of the display indicates that the battery voltage is low and the battery should be charged.

E. To Replace the Battery Pack:

1. **TURN OFF** the radio.
2. **DEPRESS** the recessed button beside the belt clip on the rear of the radio and **SLIDE** the battery toward the bottom of the radio.
3. **LIFT** the battery up from the radio.
4. [To install a fresh battery pack] **ALIGN** the tabs on the battery with the slots on the radio and **SLIDE** the battery pack toward the top of the radio until it clicks.

F. The channel selector knob and the buttons on the front panel of the radio serve no function and should not be manipulated.

ENCLOSURE 2

LIMERICK GENERATING STATION, UNITS 1 & 2

**Docket Nos. 50-352
50-353**

**License Nos. NPF-39
NPF-85**

EMERGENCY RESPONSE PROCEDURE

REPORT INDEX

PROCEDURE INDEX REPORT:

FAC	DOC TYPE	PROC TYPE	PROCEDURE NUMBER	CURR REV NBR	TITLE	EFFECTIVE DATE	RESP GROUP	SYSTEM NBR
LG	PROC	EP	EP-AA-1	0000	EMERGENCY PREPAREDNESS	10/20/00		
LG	PROC	EP	EP-AA-10	0001	EMERGENCY PREPAREDNESS PROCESS DESCRIPTION	12/12/02		
LG	PROC	EP	EP-AA-11	0001	OPERATING STATIONS EMERGENCY PREPAREDNESS PROCESS DESCRIPTION	12/12/02		
LG	PROC	EP	EP-AA-1101	0001	EP FUNDAMENTALS	12/20/02		
LG	PROC	EP	EP-AA-1102	0000	ERO FUNDAMENTALS	12/20/02		
LG	PROC	EP	EP-AA-110	0004	ASSESSMENT OF EMERGENCIES	02/20/03		
LG	PROC	EP	EP-AA-110-301	0002	CORE DAMAGE ASSESSMENT (BWR)	10/31/03		
LG	PROC	EP	EP-AA-110-302	0001	CORE DAMAGE ASSESSMENT (PWR)	12/03/02		
					*****NO HARDCOPY DIST AT LGS SEE P4****			
LG	PROC	EP	EP-AA-111	0007	EMERGENCY CLASSIFICATION AND PROTECTIVE ACTION RECOMMENDATIONS	09/18/03		
LG	PROC	EP	EP-AA-112	0008	EMERGENCY RESPONSE ORGANIZATION (ERO)/EMERGENCY RESPONSE FACILITY (ERF) ACTIVATION AND OPERATION	05/23/03		
LG	PROC	EP	EP-AA-112-100	0005	CONTROL ROOM OPERATIONS	02/20/03		
LG	PROC	EP	EP-AA-112-200	0004	TSC ACTIVATION AND OPERATION	02/20/03		
LG	PROC	EP	EP-AA-112-201	0001	TSC COMMAND AND CONTROL	02/20/03		
LG	PROC	EP	EP-AA-112-202	0001	TSC FACILITY SUPPORT GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-203	0001	TSC OPERATION GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-204	0001	TSC TECHNICAL SUPPORT GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-205	0001	TSC MAINTENANCE GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-206	0001	TSC RADIATION PROTECTION/CHEMISTRY GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-300	0004	OPERATIONS SUPPORT CENTER ACTIVATION AND OPERATION	02/20/03		
LG	PROC	EP	EP-AA-112-400	0004	EMERGENCY OPERATIONS FACILITY ACTIVATION AND OPERATION	02/20/03		
LG	PROC	EP	EP-AA-112-401	0002	NUCLEAR DUTY OFFICER (NDO)	10/13/03		
LG	PROC	EP	EP-AA-112-402	0001	EOF COMMAND AND CONTROL	02/20/03		
LG	PROC	EP	EP-AA-112-403	0002	EOF LOGISTICS SUPPORT GROUP	09/18/03		
LG	PROC	EP	EP-AA-112-404	0001	EOF TECHNICAL SUPPORT GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-405	0001	EOF PROTECTIVE MEASURES GROUP	02/20/03		
LG	PROC	EP	EP-AA-112-600	0006	JOINT PUBLIC INFORMATION CENTER (JPIC) ACTIVATION	05/23/03		
LG	PROC	EP	EP-AA-112-601	0001	EMERGENCY NEWS CENTER (ENC) OPERATIONS	02/20/03		
LG	PROC	EP	EP-AA-112-602	0002	JPIC ACTIVATION AND OPERATION	05/23/03		
LG	PROC	EP	EP-AA-113	0004	PERSONNEL PROTECTIVE ACTIONS	08/30/02		
LG	PROC	EP	EP-AA-114	0004	NOTIFICATIONS	02/20/03		
LG	PROC	EP	EP-AA-115	0002	TERMINATION AND RECOVERY	09/18/03		
LG	PROC	EP	EP-AA-120	0003	EMERGENCY PLAN ADMINISTRATION	12/20/02		
LG	PROC	EP	EP-AA-120-1001	0003	10 CFR 50.54(Q) CHANGE EVALUATION	05/21/03		
LG	PROC	EP	EP-AA-120-1002	0000	STORM/EVENT RESTORATION	10/09/02		
LG	PROC	EP	EP-AA-121	0003	EMERGENCY RESPONSE FACILITIES AND EQUIPMENT READINESS	12/20/02		
LG	PROC	EP	EP-AA-121-1001	0003	AUTOMATED CALL-OUT SYSTEM MAINTENANCE	05/21/03		
LG	PROC	EP	EP-AA-122	0004	DRILLS AND EXERCISES	09/05/03		
LG	PROC	EP	EP-AA-122-1001	0003	DRILL DEVELOPMENT, CONDUCT AND EVALUATION	09/05/03		
LG	PROC	EP	EP-AA-122-1002	0003	EXERCISE DEVELOPMENT, CONDUCT AND EVALUATION	09/05/03		
LG	PROC	EP	EP-AA-122-1003	0003	SCHEDULING OF DRILLS AND EXERCISES	09/05/03		
LG	PROC	EP	EP-AA-122-1004	0002	DEMONSTRATION CRITERIA	09/05/03		
LG	PROC	EP	EP-AA-123	0002	COMPUTER PROGRAMS	11/05/02		
LG	PROC	EP	EP-AA-123-1003	0000	CORE DAMAGE ASSESSMENT METHODOLOGY (CDAM) PROGRAM TECHNICAL BASIS	10/31/03		
LG	PROC	EP	EP-AA-124	0004	INVENTORIES AND SURVEILLANCES	12/20/02		
LG	PROC	EP	EP-AA-125	0002	EMERGENCY PREPAREDNESS SELF EVALUATION PROCESS	12/20/02		
LG	PROC	EP	EP-AA-125-1001	0002	EP PERFORMANCE INDICATOR GUIDANCE	12/20/02		
LG	PROC	EP	EP-AA-125-1002	0002	ERO PERFORMANCE - PERFORMANCE INDICATORS GUIDANCE	12/20/02		

LIMERICK GENERATING STATION
PROCEDURE INDEX REPORT:

FAC	DOC TYPE	PROC TYPE	PROCEDURE NUMBER	CURR REV NBR	TITLE	EFFECTIVE DATE	RESP GROUP	SYSTEM NBR
LG	PROC	EP	EP-AA-125-1003	0002	ERO READINESS - PERFORMANCE INDICATORS GUIDANCE	12/20/02		
LG	PROC	EP	EP-AA-125-1004	0002	EMERGENCY RESPONSE FACILITIES & EQUIPMENT PERFORMANCE INDICATORS GUIDANCE	12/20/02		
LG	PROC	EP	EP-AA-125-1005	0000	PROBLEM IDENTIFICATION & RESOLUTION PERFORMANCE INDICATOR GUIDANCE	12/20/02		
LG	PROC	EP	EP-LG-112-500	0000	EMERGENCY ENVIRONMENTAL MONITORING	11/03/03		
LG	PROC	EP	EP-MA-110-100	0002	ERO COMPUTER APPLICATIONS	07/01/03		
LG	PROC	EP	EP-MA-110-200	0003	DOSE ASSESSMENT	08/08/03		
LG	PROC	EP	EP-MA-112-406	0001	MAROG OFFSITE LIAISONS	02/20/03		
LG	PROC	EP	EP-MA-113-100	0002	ASSEMBLY AND SITE EVACUATION	10/31/03		
LG	PROC	EP	EP-MA-114-100	0005	MID-ATLANTIC STATE/LOCAL NOTIFICATIONS	09/18/03		
LG	PROC	EP	EP-MA-121-1002	0000	ALERT NOTIFICATION SYSTEM (ANS) DESCRIPTION, TESTING, MAINTENANCE AND PERFORMANCE TRENDING PROGRAM	12/20/02		
LG	PROC	EP	EP-MA-121-1004	0000	EMERGENCY PREPAREDNESS ALERT NOTIFICATION SYSTEM (ANS) CONTROL OF EQUIPMENT & OUTAGES	12/20/02		
LG	PROC	EP	EP-MA-123-1001	0000	KI ASSESSMENT SPREADSHEET TECHNICAL BASIS	07/01/03		
LG	PROC	EP	EP-MA-123-1004	0000	DOSE ASSESSMENT AND PROTECTIVE ACTION RECOMMENDATION (DAPAR) PROGRAM TECHNICAL BASIS FOR LIMERICK GENERATING STATION	08/08/03		
LG	PROC	EP	EP-MA-124-1001	0003	FACILITY INVENTORIES AND EQUIPMENT TESTS	10/13/03		

** END OF REPORT **