SEP 15 1992

Honorable Judge Youmans
Judge of Probate Court
Houston County
P. O. Drawer 6406
Dothan, AL 36302

Dear Judge Youmans:

Thank you for your interest in the Farley Systematic Assessment of Licensee Performance (SALP) that was presented at the meeting you attended August 26, 1992, with Southern Nuclear Operating Company and the NRC.

During the meeting, you had questions about the river between Alabama and Georgia and the water rights. The NRC has no jurisdiction over water rights; however, the concerned states and the U.S. Army Corp of Engineers have established an Executive Coordinating Committee to make recommendations to resolve the water rights issue. This is a list of the persons on that committee:

Executive Coordinating Committee

Joe E. Tanner, Commissioner
Georgia Department of Natural Resources
(404) 656-3500

Lieutenant Governor Buddy McKay, Florida
Carol Browner, Secretary
Department of Environmental Regulations
(904) 488-4805

Dr. Don Hines, Assistant Director and Chief
Planning and Economic Development Division
State of Alabama
(205) 242-5442

Colonel Robert H. Griffin
Mobile Army Corp of Engineers
(205) 690-2511

During the meeting, you also asked if a tornado had ever struck a nuclear plant. We are not aware of any direct strikes by a confirmed tornado; however, 75 mph winds struck the turbine building of the River Bend Nuclear Plant in Louisiana, March 5, 1992. Sheet metal siding was blown off as indicated in the enclosed LER (50-458/92-05). As indicated in the LER, the siding was designed to release from the structural steel to prevent greater damage to the building when wind speeds created a pressure differential greater than 70 pounds per square foot. There have been other instances of damage to transmission lines near nuclear plants that were believed to have been caused by a tornado, but there were not any witnesses.

JE40 1/1

Another event at Quad Cities in Illinois involved a tornado that touched down in the protected area, and some site external damage occurred. Debris was scattered about the area and one person suffered a broken ankle; however, plant operations continued at reduced power. The other unit was already shut down (LER 254/90-06 enclosed).

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

Sincerely,

Original signed by:
Stewart D. Ebneter

Stewart D. Ebneter
Regional Administrator

Enclosures:
1. LER 50-458/92-005
2. LER 50-254/90-006

bcc: W. Rankin, RII
F. Cantrell, RII
R. Trojanowski, RII

*SEE PREVIOUS CONCURRENCE

RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:ORA
FCantrell:tj	DVerrelli	JJohnson	*WRankin	*BTrojanowski
09/15/92	09/15/92	09/ /92	09/ /92	09/ /92

about the area and one person suffered a broken ankle, however, plant operations continued at reduced power. The other unit was already shutdown (LER 254/90-06 enclosed).

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

Sincerely,

Stewart D. Ebneter
Regional Administrator

Enclosures:
1. LER 50-458/92-005
2. LER 50-254/90-006

bcc: W. Rankin, RII
F. Cantrell, RII
R. Trojanowski, RII

9/8/92

*SEE PREVIOUS CONCURRENCE

RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:ORA
*FCantrell:tj	*DVerrelli	*JJohnson	*WRankin	*BTrojanowski
09/ /92	09/ /92	09/ /92	09/ /92	09/ /92

about the area and one person suffered a broken ankle, however, plant operations continued at reduced power. The other unit was already shutdown (LER 254/90-06 enclosed).

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

Sincerely,

Stewart D. Ebneter
Regional Administrator

Enclosures:
1. LER 50-458/92-005
2. LER 50-254/90-006

bcc:
W. Rankine RII
F. Cantrell RII
R. Trojanowski RII

RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:ORA
FCantrell:tj	DVerrelli	JJohnson	WRankin	BTrojanowski
09/4/92	09/4/92	09/4/92	09/4/92	09/4/92

Commonwealth Edison
Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

RLB-90-102

April 11, 1990

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Reference: Quad Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed is Licensee Event Report (LER) 90-006, Revision 00, for Quad Cities Nuclear Power Station.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iii): The licensee shall report any natural phenomenon or other external condition that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD CITIES NUCLEAR POWER STATION

R. L. Bax
Station Manager

RLB/MJB/djb

Enclosure

cc: R. Stols
R. Higgins
INPO Records Center
NRC Region III

2711N

IE22
1/1

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Quad Cities Unit One	0 5 0 0 0 2 5 4	1 of 0 4

Title (4)

Tornado Touched Down On Site.

Event Date (5)			LER Number (6)				Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Year	///	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)
										Quad Cities 2	0 5 0 0 0 2 6 5
0 3	1 3	9 0	9 0	---	0 0 7 6	--- 0 0	0 4	1 1	9 0		0 5 0 0 0 _ _

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)					
		___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)		
POWER LEVEL (10)		___ 20.405(a)(1)(i)	___ 50.36(c)(1)	___ 50.73(a)(2)(v)	___ 73.71(c)		
		___ 20.405(a)(1)(ii)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)	___ Other (Specify		
4	0 5 0	___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	in Abstract		
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	below and in		
		___ 20.405(a)(1)(v)	X 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	Text)		

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
	AREA CODE
M. Brown, Regulatory Assurance, Ext. 3102	3 0 9 6 5 4 - 2 2 4 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		Expected Submission Date (15)	Month	Day	Year
___ Yes (If yes, complete EXPECTED SUBMISSION DATE)	___ X NO				

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

ABSTRACT:

On March 13, 1990, Unit 1 was operating in the RUN mode at 50 percent rated core thermal power and Unit 2 was SHUTDOWN. At 1625 hours, a tornado warning for Rock Island County was received on the weather radio. The station entered procedure QCA 010-10, TORNADO WARNING/SEVERE WINDS. At 1710 hours, a tornado touched down on-site. At 1711 hours, an Emergency Notification System (ENS) phone notification was completed in accordance with 10CFR50.72(b)(1)(iii). By 1713 hours, the tornado had passed through. Unit One operation was not affected. Some site external damage was sustained, and appropriate repairs have been completed. One person sustained minor injuries.

Corrective action will include evaluating notification of site personnel.

This report is being submitted in accordance with 10CFR50.73(a)(2)(iii).

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWt rated core thermal power.

EVENT IDENTIFICATION: Tornado Touched Down On Site.

A. CONDITIONS PRIOR TO EVENT:

Unit: One Event Date: March 13, 1990 Event Time: 1704
Reactor Mode: 4 Mode Name: RUN Power Level: 50%

This report was initiated by Deviation Report D-4-1-90-024

RUN Mode (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. DESCRIPTION OF EVENT:

On March 13, 1990, Unit 1 was operating in the RUN mode at 50 percent of rated core thermal power and Unit 2 was Shutdown. At 1625 hours, a tornado warning for Rock Island County was received on the weather radio.

The station entered procedure QOA 010-10, TORNADO WARNING/SEVERE WINDS. Appropriate actions were taken which included operations and security notifying site personnel of the situation and to move to a safe location. At approximately 1704 hours, a tornado was sighted south of the plant. A load drop to less than 45 percent of rated core thermal power was initiated. At 1708 hours, a General Station Emergency Procedure (GSEP) Unusual Event was declared in accordance with QEP 200-1, Classification of GSEP Condition, and a Nuclear Accident Reporting System (NARS) phone notification was completed. At 1710 hours, a tornado touched down on-site. An Emergency Notification System (ENS) phone notification was completed at 1711 hours in accordance with 10 CFR 50.72(b)(1)(iii). By 1713 hours, the tornado had passed through the site.

The tornado struck a portion of the station's security fence [IA] at the south end of the protected area and proceeded west around the Turbine Building [NM]. At the north end of the protected area, it also damaged some of the security fence and alarm fields, lighting, trailers, and part of the Turbine Building and Radwaste [NE] ventilation system [VH]. One person sustained minor injuries.

The security damages sustained to the fence were discovered at 1713 hours and compensatory measures were implemented immediately. No breach of security occurred. After investigation, there was no apparent damage to the lighting and only one camera had been blown out of position, and was able to be readjusted.

Surveys of the site for damage were initiated. A portion of the Radwaste Cement Silo Room roof had been blown onto a section of the Radwaste Max. Recycle Ventilation ducting and opened it to the atmosphere. The ducting was temporarily repaired. Also, the personnel access door of the Turbine Building Ventilation ducting had been blown open. The access door was closed and repaired. Samples and smears outside of both areas and around the plant showed no measurable activity had been released.

Only one personnel injury occurred. An ambulance was summoned and the person taken to a medical facility. Injuries involved abrasions, contusions, torn neck ligaments, and a twisted ankle. Just prior to the tornado's arrival, the station had attempted to contact all station personnel by utilizing the site paging system. To further ensure that site personnel were informed, Security Department personnel were dispatched within the protected area to warn personnel with bull horns. The person that was injured said he heard the site page and the bull horns, but could understand neither.

The site survey also revealed some damage or losses to the outside fire protection system. A fire hose cabinet (north of Lift Station), and two portable hose carts (south of Hydrogen Tank Farm) were found to need repair/replacing. Back-up fire protection was established.

At 1730 hours, the unit was holding load at 37 percent of rated core thermal power. At approximately 1736 hours, an ENS and HARS phone update was completed and the GSEP condition was changed to a tornado strike. The Operations Support Center (OSC) was activated and the Technical Support Center (TSC) was manned. Command and control was transferred to the TSC at approximately 1808 hours.

At 1843 hours, an assembly for personnel accountability was sounded and by 1905 hours, everyone was accounted for. Another set of operator rounds was completed to verify no effect on Unit One. The GSEP was terminated at 2236 hours.

There were no other structures, components or systems inoperable or degraded at the start of this event that could have contributed to the event.

C. APPARENT CAUSE OF EVENT:

This report is being submitted to comply with 10 CFR 50.73(a)(2)(iii): The licensee shall report any natural phenomenon or other external condition that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant.

The cause of this event is a tornado touching down on site with the potential for impacting plant safety equipment.

D. SAFETY ANALYSIS OF EVENT:

The safety consequences of this event were minimal. Personnel were warned by Operations and Security ahead of time to find a safe location. There was only one personnel injury involved.

In addition to the regular operators rounds, Operations completed another set of rounds readings for Unit One after the tornado passed and verified no effect on the plant.

Due to the damage to the turbine building and radwaste ventilation ducting and the possibility for an unmonitored radiation release path, samples and smears around the damaged areas and the plant were completed. These showed no measurable activity had been released.

Security compensatory measures were established immediately and no breach of security occurred.

E. CORRECTIVE ACTIONS:

The immediate corrective action was to warn site personnel and have them move to a safe location.

After the tornado left, operations completed another set of operator rounds readings which verified that there was no effect on the plant: Backup fire protection was established for the fire equipment that had been lost or damaged outside by the lift station and hydrogen system tanks.

Security immediately set compensatory measures into effect. All security items that required compensatory measures have been repaired.

The damaged ventilation ducting was permanently repaired on March 23, 1990.

The injured person received proper medical treatment.

An evaluation of how site personnel are notified, especially in remote areas of the site, will be completed (MTS 2542009002401).

F. PREVIOUS EVENTS:

This is the first known event where a tornado touched down inside the protected area of an operational nuclear power plant.

No further corrective actions are deemed necessary.

G. COMPONENT FAILURE DATA:

This event was not the result of a component failure.

GULF STATES UTILITIES COMPANY

April 6, 1992
RBG- 36706
File Nos. G9.5, G9.25.1.3

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

River Bend Station - Unit 1
Docket No. 50-458

Please find enclosed Licensee Event Report No. 92-005 for River Bend Station - Unit 1. This report is submitted pursuant 10CFR50.73

Sincerely,

W.H. Odell
Manager - Oversight
River Bend Nuclear Group

LAE/PDG/SRR/DCH/REC/kvm

cc: U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

NRC Resident Inspector
P.O. Box 1051
St. Francisville, LA 70775

INPO Records Center
1100 Circle Parkway
Atlanta, GA 30339-3064

Mr. C.R. Oberg
Public Utility Commission of Texas
7800 Shoal Creek Blvd., Suite 400 North
Austin, TX 78757

IE22
1/1

NRC FORM 366
(6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)
RIVER BEND STATION

DOCKET NUMBER (2)
0 5 0 0 0 4 5 8

PAGE (3)
1 OF

TITLE (4)
REACTOR SCRAM CAUSED BY A GENERATOR TRIP DUE TO A PHASE TO GROUND FAULT CAUSED BY TRANSPORTABLE DAMAGE

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBERS
03	05	92	92	- 01	- 00	04	03	92		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: J. V. LAGARDE, DIRECTOR - NUCLEAR LICENSING

TELEPHONE NUMBER: AREA CODE 5 0 1 3 8 6 3 1 1 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE) [X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 02:03 on March 5, 1992 with the unit operating at 100% power, (Operational Condition 1), a reactor scram occurred due to TCV fast closure. This was caused by a generator trip due to a C phase-to ground fault of approximately 5 cycles on the 230KV transmission line from the main generator step up transformers to the Fancy Point switchyard. This ground occurred as a result of high winds which blew sheet metal siding loose from the southeast corner of the Turbine Building causing it to land on energized components and damage the No. 2 main generator step up transformer high side disconnect switch.

Upon receiving a report of the extent of the damage, the Shift Supervisor declared a Notification of Unusual Event (NOUE) at 03:50. The NOUE was terminated at 04:23. All safety related systems functioned as designed in response to the transient. This report is submitted pursuant to 10CFR50.73(a)(2)(iv) to document the reactor scram.

The root cause of this event was high winds during a thunderstorm causing damage to the plant turbine building resulting in a phase to ground fault. This led to a generator trip and subsequent reactor scram, per design. The reactor scram occurred as designed. All safety systems functioned per design to place the plant in a safe shutdown condition. In addition, GSU has concluded that the radiological implications of insulation being blown out of the building walls are bounded by 10CFR20 Appendix C limits.

REPORTED CONDITION

At 02:03 on March 5, 1992 with the unit operating at 100% power, (Operational Condition 1), a reactor scram occurred due to TCV fast closure. This was caused by a generator trip due to a C phase-to-ground fault of approximately 5 cycles on the 230KV transmission line from the main generator step up transformers to the Fancy Point switchyard. This ground occurred as a result of high winds which blew sheet metal siding loose from the southeast corner of the Turbine Building causing it to land on energized components and damage the No. 2 main generator step up transformer high side disconnect switch. Data from the River Bend meteorological tower retrieved on the next shift indicated that the wind was gusting up to 75 MPH at the approximate time of the event.

Upon receiving a report of the extent of the damage, the Shift Supervisor declared a Notification of Unusual Event (NOUE) at 03:50. The NOUE was terminated at 04:23. All safety-related systems functioned as designed in response to the transient. This report is submitted pursuant to 10CFR50.73(a)(2)(iv) to document the reactor scram.

At the time of the event, GSU was only 10 days away from the scheduled start date for the fourth refueling outage (RF-4). After evaluating the extent of the damage and time required to make adequate repairs to safely restart, the decision was made to enter the refueling outage rather than attempt to restart the plant.

INVESTIGATION

An inspection of the Turbine Building damage revealed that a section of the sheet metal siding approximately 65 feet wide by 42 feet high was torn from the southeast corner of the building. This siding is designed such that its attachments to building structural steel will release at wind pressures exceeding 70 pounds per square foot (PSF). This is to protect the building steel from damage. The siding is also designed to stay intact at wind pressures corresponding to the design 100 year wind speed of 100 MPH measured at 30 feet above the ground.

A complete walkdown of the Turbine Building was performed by the River Bend Station (RBS) Design Engineering Department. In addition to the obvious damage to the southeast corner of the building, inner siding panels on the southwest corner of the building were also found to be loose as well as some flashing on the southwest corner of the building. Additional exterior siding panels were found to be loose on the south wall of the Turbine Building. No structural damage to the building steel or damage to plant equipment within the turbine building was found.

During the subsequent shift, data from chart recorders at the River Bend meteorological tower revealed that wind gusts up to approximately 75 MPH were occurring at the approximate time of the event. Note that the meteorological tower is located approximately 2800 feet west of the reactor containment (which is adjacent to the turbine building). Therefore, it is possible that higher wind velocities existed near the Turbine Building. Based on the review of the damage by RBS Design Engineering and the

meteorological tower data, it appears that the siding performed as intended by releasing due to high pressure loading from strong winds.

The sheet metal siding which came loose from the turbine building was dropped onto and scattered around the area of the main generator step up transformers. Although the exact sequence cannot be determined, it appears that a portion of the siding landed on one or more energized components (i.e. the step-up transformer leads, the 230KV transmission line or the transformer disconnect switch). Additionally, the high side disconnect switch (1YWC-21215) for the no. 2 main generator step up transformer (1MTX-XM2) was broken loose from its supports either as a result of the winds or from the force of the sheet metal siding striking it.

Visual inspection of the main generator step up transformer 1MTX-XM2 revealed that the leads from the 230KV disconnect switch (1YWC-21215) to the high side transformer bushings were knocked off. In the process the leads to the A and C phase lightning arrestors also detached. Minor damage existed to one transformer high side bushing and low side neutral bushing as well as the pressure relief valve, air breather piping, and A and C phase secondary bus housing. All three phases of the high side disconnect switch (1YWC-21215) were damaged. Four inspection covers on the isophase bus duct were dented and some had their retaining straps broken off. The A phase duct near the 1MTX-XM2 transformer was dented.

A visual inspection of the No. 1 main generator step up transformer, 1MTX-XM1 revealed no indications of damage.

A fiber optic communications cable was severed. This cable was attached to the 230KV transmission line dead end support structure and connects the plant to the Fancy Point switchyard. The cable is used for tone relaying of the transmission lines and other unrelated communications such as interfacing with computers at GSU corporate headquarters. The relaying which communicates via the fiber optic cable is redundant to two other relay channels which communicate via pilot wires which are underground and were not affected by the storm. With the exception of the tone relaying system carried over the damaged fiber optic cable, all relaying operated properly to clear the fault.

The damage to the southeast wall of the Turbine Building as described above resulted in approximately 2730 square feet of 1.5 inch thick fiberglass insulation and other debris being scattered onto the buildings and grounds within the plant protected area and into the parking lots, roadways and grounds outside and north of the protected area. Initial gamma isotopic analyses of the insulation indicated trace amounts of fission products and Cobalt 60. Surveys were performed approximately one hour after the event as soon as weather permitted. These surveys indicated 1000 to 4000 disintegrations per minute per probe of fixed beta gamma contamination on some of the insulation and siding.

Actions taken to control the spread of the contaminated insulation and assess the spread of the radioactivity were as follows:

1. Samples of runoff water, to and from the storm sewer collection system and from the Unit 2 excavation were collected and gamma isotopic analyses were performed. No radioactivity other than natural background levels was detected.

2. Vehicle access to the industrial area of the plant was secured and nonessential personnel were sent home and/or not allowed on site for the day. Vehicles leaving the site were inspected for insulation and any insulation found was removed and monitored with a pancake G-M detector. Insulation with detectable radioactivity was found on two vehicles from the lower parking lots. The insulation was removed and the vehicles surveyed and found free of contamination. The vehicles of those personnel returning to work on the afternoon and evening of March 5, 1992 were inspected and no radioactive contamination was found.

3. A task force of personnel was assembled to retrieve the insulation. Collection and containment of the insulation began at approximately 10:00 on March 5, 1992. The upper parking lots were cleared of insulation by the evening of March 5, 1992. The entire area outside of the protected area fence was free of insulation by the morning of March 7, 1992. This was verified by a walkdown of the area and by aerial observation. The protected area was cleared of insulation by the afternoon of March 8, 1992. Followup surveys of the protected area revealed no detectable radioactive contamination.

It was estimated, based on amounts recovered, that approximately 10% of the total amount of insulation removed from the turbine building was carried outside the protected area fence. An assessment of the radioactive contamination of the insulation indicates that the amount of radioactivity carried outside the protected area fence was less than the 10CFR20 Appendix C limits for the respective isotopes based on amounts recovered. The assessment of radioactive contamination also shows that the total amount of radioactivity of each isotope contained in the entire 2730 square feet of insulation, with the exception of I-133, does not exceed the 10CFR20 Appendix C limits. The total I-133 activity was 1.09 microCuries (uCi). The Appendix C limit for this isotope is 1 uCi.

Samples of the soil taken from the protected area grounds at locations under the rain soaked insulation showed no presence of fission products and only trace amounts of Cobalt 60 (Co-60). An isotopic analysis of insulation collected from outside the protected area showed fission product concentrations at approximately the same magnitude as samples of insulation taken from undamaged portions of the turbine building wall.

Although no radioactivity was detected in runoff water, a sample of sediment from the east creek taken on the morning of March 6, 1992 contained approximately 12 pico curies per kilogram of Co-60. The east creek carries the majority of the runoff water from the east side of the protected area and is

sampled monthly by the RBS Environmental Services Group for the presence of radionuclides. A follow up sample taken on March 9 showed no detectable Co-60 activity. It appears from these sample results that the fission product activity is relatively fixed within the insulation while the Co-60 activity in the removed insulation was washed out by the rain and transported in the east creek effluent. The total calculated activity available of Co-60 in the 2730 square feet of insulation was 0.129 uCi. This is approximately 13% of the 10 CFR 20 Appendix C limit of 1 uCi.

The source of the radioactivity found in the insulation is internal mixing of turbine building air into the annulus area of the turbine building outer wall. The insulation acts as a filter, removing and concentrating contaminants. Turbine building air apparently enters and exits the wall through gaps in the inner wall located at the junctions of the inner wall panels. Inspection of the damaged wall reveals accumulations of dust at the panel junctions. Dustborne contaminants such as Co-60 are concentrated at the points of air entry by mechanical filtration. Samples of insulation from other parts of the turbine building wall indicate that fission gasses and their daughters are more uniformly distributed throughout the insulation. Although circulation of air within the wall occurs, the turbine building is maintained at a negative pressure relative to the outside atmosphere and there is no unmonitored release of radioactivity.

GSU has concluded that the amount of radioactivity released to the area outside the protected area posed no threat to the public or plant personnel. Based on conservative assumptions, the maximum amount of radioactivity that could have been released outside the protected area due to Co-60 was 0.129 microCuries.

The plant response to the transient was generally as would be expected with a few exceptions which will be discussed below. The protective relaying operated properly with the exception of the tone relaying which was disabled when the fiber optic cable was damaged as discussed previously. Total time to detect and clear the fault (i.e. trip the generator) was 5 cycles which is typical for this type fault and equipment. A turbine control valve (TCV) fast closure resulting in a reactor scram occurred properly. The resulting pressure transient in the reactor vessel caused all five low low set safety relief valves (SRVs) to lift. This was proper operation as the Emergency Response Information System (ERIS) computer system indicates a maximum reactor pressure of 1113 PSIG. One of the low low set SRVs (F051D) lifts at 1103 PSIG and the other four lift at 1113 PSIG. After their initial opening, the SRVs reclosed properly. Reactor pressure remained below the low low set SRV setpoints so that they did not reopen.

Initial reports indicated a possible discrepancy between the time of the scram initiation and the time at which control rod motion was first detected which seemed to indicate that the control rods began to move prior to the initiation of the scram signal from the reactor protection system. This apparent discrepancy was based on the process computer alarm printer in the main control room which listed the control rod motion prior to the scram. It should be understood that this is not a sequence of events log. Due to the method in which the points are sequentially scanned, it is not uncommon for events which occur very close together in time to be reversed in their order on the alarm printout due to the

dependency on the point in the sequence at which the computer is scanning at the times of the occurrences. A scram time program from the ERIS TRA computer system indicates that the actual scram time was 02:03:15.213 while rod motion was first detected at 02:03:15.216. All scram times were positive time values and acceptable.

The ERIS computer indicates minimum vessel water level was approximately +3". All actuations which should have occurred at Level 3 (+9.7") were verified by the Operations crew to have occurred properly. Maximum vessel level exceeded Level 8 (+51").

ROOT CAUSE

The root cause of this event was high winds during a thunderstorm causing damage to the plant turbine building resulting in a phase to ground fault. This led to a generator trip and subsequent reactor scram, per design.

CORRECTIVE ACTION

All damage to the 1MTX-XM2 transformer will be reworked per MWO 15-92226 prior to the plant restarting from RF-4. The high side disconnect switch 1YWC-21215 will be reworked or replaced. The isophase bus duct covers will also be reworked and the dent evaluated and dispositioned during RF-4. A temporary splice was made on the fiber optic cable and testing was conducted to ensure operability of the relaying circuits. A final rework or replacement of this cable will be made during RF-4.

Oil samples of both main generator step up transformers, and all normal station service and preferred station service transformers were taken and analyzed to ensure no internal damage had occurred to the transformers. All results were satisfactory. Megger testing and Doble testing was performed on the main generator step up transformers and the isophase bus with satisfactory results. The normal station service transformers were Doble tested and found to be satisfactory. The preferred station service transformers will be tested prior to startup from RF-4. Finally, as a precaution a megger test was performed on the main generator and this was found to be acceptable.

The Turbine Building wall was temporarily replaced with plywood in accordance with Prompt Modification Request (PMR) 92-0007. This ensures that equipment inside the building is protected and that a negative pressure can be maintained inside the Turbine Building. The wall will be reworked to original specifications prior to startup from RF-4.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
RIVER BEND STATION	0 5 0 0 0 4 5 8	9 2	— 0 1 1	— 0 0	0 4 OF 0 4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

SAFETY ASSESSMENT

The reactor scram occurred as designed. All safety systems functioned per design to place the plant in a safe shutdown condition.

As stated previously, the radiological implications of the Co-60 in the insulation are bounded by the 10CFR20 Appendix C limits. The I-133 was fixed contamination in the insulation and none of it was detected in either soil samples within the protected area or in the sediment of the east creek. In addition, it was estimated that only about 10 percent of the total amount of insulation was carried outside the protected area fence and was subsequently retrieved. Therefore, GSU concludes that the quantity of radioactive material released outside the protected area was bounded by 10CFR20 Appendix C limits.