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CALLAWAY PLANT
EMERGENCY PLAN IMPLEMENTING PROCEDURE
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RESPONSE TO SEVERE THUNDERSTORM/HIGH WINDS/TORNADO WATCHES
AND WARNINGS

RESPONSIBLE DEPARTMENT Emergency Preparedness

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This procedure contains the following:

Pages	<u>1</u>	through	<u>8</u>
Attachments	<u>1</u>	through	<u>3rd 4</u> <i>ps 10/21/99</i>
Tables	<u> </u>	through	<u> </u>
Figures	<u> </u>	through	<u> </u>
Appendices	<u> </u>	through	<u> </u>
Checkoff Lists	<u> </u>	through	<u> </u>

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TABLE OF CONTENTS

<u>Section</u>		<u>Page Number</u>
1	PURPOSE AND SCOPE	1
1.1	PURPOSE	1
1.2	SCOPE	1
2	DEFINITIONS	1
3	RESPONSIBILITIES	2
4	PROCEDURE	3
4.1	MISSILE SHIELD REMOVAL	3
4.2	SEVERE THUNDERSTORM WATCH	4
4.3	HIGH WINDS	5
4.4	TORNADO WATCH	5
4.5	TORNADO WARNING	6
4.6	TORNADO WARNING FOR CALLAWAY PLANT	6
4.7	ACTIONS SUBSEQUENT TO TORNADO STRIKING CALLAWAY PLANT BUILDINGS	7
5	FINAL CONDITIONS	7
6	REFERENCES	7
7	RECORDS	8
	Attachment 1 - Announcements for Severe Thunderstorm/High Winds/Tornado's	1 Page
	Attachment 2 - TORNADOS	1 Page
	Attachment 3 – Severe Thunderstorm/High Winds/Tornadoes Door Closure List	1 Page
	Attachment 4 – Missile shield requirements	1 Page

RESPONSE TO SEVERE THUNDERSTORM/HIGH WINDS/TORNADO WATCHES AND
WARNINGS

1 PURPOSE AND SCOPE

1.1 PURPOSE

This procedure establishes the method for responding to severe thunderstorm watches, high winds, tornado watches, or tornado warnings.

1.2 SCOPE

1.2.1 Establishes the means of notifying plant workers of severe thunderstorms, high winds, tornado watches, or tornado warnings.

1.2.2 Establishes the response of plant workers during severe thunderstorms, high winds, tornado watches, or tornado warnings.

2 DEFINITIONS

2.1 APPROACHING (severe levels) - A thunderstorm which contains winds of 40 to 57 mph, or hail 1/2 inch or larger but less than 3/4 inch in diameter.

2.2 FUNNEL CLOUD - A condensation funnel extending from the base of a towering Cumulus or Cumulonimbus cloud (Cb), associated with a rotating column of air that is not in contact with the ground (and hence different from a tornado).

2.3 HIGH WINDS - Winds in excess of 40 mph (18 m/s) sustained, or 58 mph (26 m/s) gusting.

2.4 National Oceanic and Atmospheric Administration (NOAA) - An organization of the U.S. Commerce Department. NOAA's National Weather Service keeps a round-the-clock vigil on atmospheric conditions and issues watches and warnings for severe atmospheric conditions. A weather radio which can receive NOAA weather announcements is located in the Control Room, in the Shift Supervisor's office, and is activated when local severe weather conditions exist.

- 2.5 SEVERE THUNDERSTORM - A thunderstorm which produces tornadoes, hail 0.75 inches or more in diameter, or winds of 58 mph or more. Structural wind damage may imply the occurrence of a severe thunderstorm. See approaching (severe).
- 2.6 THUNDERSTORM – Rain clouds producing lightning.
- 2.7 TORNADO WATCH - Identifies an area where conditions are favorable for a tornado formation.
- 2.8 TORNADO WARNING - A tornado warning means that a tornado has been sighted or indicated by weather radar.
- 2.9 TORNADO - A violently rotating column of air in contact with the ground and extending from the base of a thunderstorm. A condensation funnel does not need to reach to the ground for a tornado to be present; a debris cloud beneath a thunderstorm is all that is needed to confirm the presence of a tornado, even in the total absence of a condensation funnel.
- 2.10 WARNING - Issued by NWS local offices indicating that a particular weather hazard is either imminent or has been reported. A warning indicates the need to take action to protect life and property. The type of hazard is reflected in the type of warning (e.g., tornado warning, blizzard warning).
- 2.11 WATCH - A National Weather Service (NWS) product indicating that a particular hazard is possible, i.e., that conditions are more favorable than usual for its occurrence. A watch is a recommendation for planning, preparation, and increased awareness (i.e., to be alert for changing weather, listen for further information, and think about what to do if the danger materializes).

3 RESPONSIBILITIES

- 3.1 SHIFT SUPERVISOR
 - 3.1.1 Ensures Attachment 1, Announcements for High Winds/Tornado's, is completed during severe thunderstorm watches, high winds, tornado watches, or tornado warnings.
 - 3.1.2 Ensures precautionary actions (Section 4.1) are taken to the extent possible.

- 3.1.3 Ensures proper weather monitoring when opening missile shields for operable safety related equipment.
- 3.2 DEPARTMENT HEADS AND SUPERVISORY PERSONNEL
- 3.2.1 Department heads and plant supervisory personnel are responsible for ensuring that personnel performing work at locations outside the range of plant announcements are notified of severe thunderstorm watches, high winds, tornado watches, or tornado warnings, if possible.
- 3.3 ADMINISTRATION DEPARTMENT

Administration ensures that updated copies of Attachment 2, Tornado's, are posted and remain visible on plant bulletin boards.
- 3.4 PLANT EMPLOYEES
- 3.4.1 Plant employees are responsible for following the protective action recommendations made over the plant Gai-tronics.
- 3.4.2 Plant employees have the responsibility to become familiar with the location of designated shelters, or actions to be taken should these shelters not be readily accessible. Locations and actions are listed in Attachment 2, Tornado's.
- 4 PROCEDURE
- 4.1 MISSILE SHIELD REMOVAL
- 4.1.1 An initial assessment of current and future (48 hours) weather conditions should be conducted prior to missile shield removal. See Attachment 4 for the list of shields and monitoring distance.
- 4.1.2 If thunderstorms are in or predicted within the monitoring area moving in the direction of the plant, work should be delayed.
- 4.1.2.1 If work is urgent and it is desired to proceed, a Tornado translational speed of 70 mph should be considered per Reg. Guide 1.76.

- 4.1.3 Contact Security, at the Key Issue Station, to perform weather monitoring. Security contacts Surface Systems, Inc. (SSI) of St. Louis, Missouri. SSI is under contract with Ameren Corporation to provide weather monitoring and forecasting. SSI phone numbers are, 800-994-7947 or 314-872-0560.
- 4.1.3.1 Security calls SSI hourly for updates of weather conditions and if conditions change within the hour SSI contacts Security.
- 4.1.4 Prior to opening a missile shield verify sufficient resources are available to close the shield.
- 4.1.5 An informational EOSL should be initiated for the shield to be removed.
- 4.1.6 Refer to Attachment 4 for monitoring requirements and additional information.

4.2 SEVERE THUNDERSTORM WATCH

- 4.2.1 Notify plant personnel of a severe thunderstorm watch by using Attachment 1, Announcements for High Winds/Tornado's, Step A.
- 4.2.2 Doors listed on Attachment 3, High Winds/Tornado Door Closure List, should be closed if possible. Any door that is unattended and cannot be readily closed should be evaluated by the SS/OS to determine if the door may be left open.

<p><i><u>NOTE:</u></i> Access through a door is not intended to be restricted by this procedure. Access is a personal judgement depending on conditions.</p>
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- 4.2.2.1 Have Security (CAS/SAS) verify that all monitored doors listed on Attachment 3, Section A, are closed or capable of being closed by personnel at the door.
- 4.2.2.2 Have watch station equipment operators verify that all doors listed on Attachment 3, Section B, are closed or capable of being closed by personnel at the door.
- 4.2.3 Inspect the switchyard and other outside areas for loose equipment that should be moved or tied down. **COMN 41813**
- 4.2.4 Frequent tours should be made to assess any imminent problems.

- 4.2.5 Direct Maintenance to ensure that both turbine building cranes' tornado parking locks are engaged if not in use or before the storm reaches the plant.
- 4.2.6 Ensure that missile covers are installed on the emergency diesel engine fuel oil storage tanks. **RFR 001983A**
- 4.2.7 Ensure in Modes 1, 2 & 3 that missile shields are in place (bolting not required for missile protection) on the MSIV rooms at the plant south end of the 2065' level of the Turbine Building. **RFR 002403E**
- 4.2.8 Ensure the Reactor Building Equipment Hatch Missile Shield is in place in Modes 1, 2, 3, 4 or Mode 6 with the fuel unprotected (head off and upper internals removed). Installation of the shield bolt/pin is not required for wind loads. **COMN 43386 RFR 018632C**
- 4.2.9 Close or check closed the Reactor Building Equipment Hatch with at least 4 bolts installed. This should be completed prior to a storm reaching the plant.
- 4.2.10 Shutdown the plant if safe operation is in jeopardy or significant damage is imminent.
- 4.3 **HIGH WINDS**
- 4.3.1 When meteorological (met) data indicates that winds in the area are in excess of 40 mph (18.0 m/s) for a 15 minute period, or 58 mph (26 m/s) instantaneous, the Shift Supervisor ensures the following steps are implemented:
- 4.3.2 Implement Section 4.1 as conditions allow.
- 4.3.3 Notify plant personnel of high winds by using Attachment 1, Announcements for High Winds/Tornado's, Step A.
- 4.4 **TORNADO WATCH**
- 4.4.1 When a tornado watch for Callaway County is broadcast over the NOAA weather radio, the Shift Supervisor ensures that plant personnel are notified of the tornado watch by using Attachment 1, Step B.
- 4.4.2 Implement Section 4.1 as conditions allow.

- 4.4.3 The outside operator and outside security patrols should be informed to alert the Control Room for changes in weather conditions to include:
- Funnel clouds.
 - Dust or debris at the surface below a cloud base.
 - Large hail (3/4 inch or greater in diameter).
 - Loud roaring noise associated with the storm.

4.5 TORNADO WARNING

- 4.5.1 When a tornado warning for Callaway County is broadcast over the NOAA weather radio, the Shift Supervisor should ensure that plant personnel are notified of the tornado warning by using Attachment 1, Step C.
- 4.5.2 All normal outside activities should be suspended until the tornado warning for Callaway County is no longer in effect.
- 4.5.3 Implement Section 4.1 as conditions allow.
- 4.5.4 Stop the performance of any surveillance procedure that might make any Engineered Safety Feature inoperable. **COMN 41813**
- 4.5.5 Verify both emergency diesel generators are aligned for automatic start per **OTN-NE-00001** , Standby Diesel Generation System. **COMN 41813**
- 4.5.6 Stop all activities associated with fuel handling and processing of radioactive materials as soon as practical but before the storm reaches the plant.

4.6 TORNADO WARNING FOR CALLAWAY PLANT

<p><u>NOTE:</u> Storm front moving toward the plant or actual sighting of a tornado by plant personnel.</p>

- 4.6.1 When a tornado warning has been issued for Callaway County and the storm front is moving in the direction of the Callaway Plant or, if weather conditions around the site indicate the PRESENCE of a TORNADO:
- 4.6.2 Sound the plant emergency alarm.

- 4.6.3 Notify plant personnel of the tornado warning by using Attachment 1, Step D.
- 4.6.4 Close the Control Room missile door 36042, Control Rm. Foyer to Comm. Corridor.
- 4.7 ACTIONS SUBSEQUENT TO TORNADO STRIKING CALLAWAY PLANT BUILDINGS
- 4.7.1 Refer to **EIP-ZZ-00101** , Classification of Emergencies, to determine the appropriate emergency classification.
- 4.7.2 Accountability should be declared using **EIP-ZZ-00230** , Accountability, to determine missing personnel. Accountability should only be declared when weather conditions become favorable.
- 4.7.3 Expedite the restoration of important plant systems and components to service. **COMN 41813**

5 FINAL CONDITIONS

- 5.1 Watches or warnings are no longer in effect for Callaway County and high wind conditions for the area no longer exist.
- 5.2 Announce over the Gai-tronics that severe storm warnings, high winds, tornado watches, or tornado warnings are no longer in effect, using Attachment 1, Step E.

6 REFERENCES

- 6.1 U.S. Department of Commerce (USDC), National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS), NOAA/PA 82001 "Tornado Safety - Surviving Nature's Most Violent Storms", January, 1982
- 6.2 USDC-NOAA-NWS, NOAA/PA 76015 "NOAA Weather Radio", Revision April, 1985
- 6.3 USDC-NOAA-NWS, NOAA/PA 81011, "Spotter's Guide for Identifying and Reporting Local Storms" Revision April, 1982
- 6.4 USDC-NOAA-NWS, Technical Memorandum NWS SR-145, A Comprehensive Glossary Of Weather Terms For Storm Spotters

- 6.5 **EIP-ZZ-00101**, Classification of Emergencies
- 6.6 **EIP-ZZ-00230**, Accountability
- 6.7 **OTN-NE-00001**, Standby Diesel Generation System
- 6.8 FSAR, Section 3.3
- 6.9 National Weather Service Operations Manual Chapter C.42
- 6.10 NUMARC 87-00
- 6.11 RFR 19618B

7 RECORDS

None

ANNOUNCEMENTS FOR SEVERE THUNDERSTORM/HIGH WINDS/TORNADOS**A. SEVERE THUNDERSTORM WATCH/HIGH WINDS** GAI-TRONICS ANNOUNCEMENT

"Attention all personnel. Attention all personnel. Conditions are favorable for the occurrence of (circle one) severe thunderstorms / high winds in the area. Be prepared to act quickly in the event conditions worsen."

(REPEAT ANNOUNCEMENT)

B. TORNADO WATCH GAI-TRONICS ANNOUNCEMENT

"Attention all personnel. Attention all personnel. A tornado watch has been issued for Callaway County. Review the Tornado posting on bulletin boards and be prepared to act quickly in the event that conditions worsen."

(REPEAT ANNOUNCEMENT)

 Contact the outside operator and security to alert the Control Room of indication of tornado's around the site.**C. TORNADO WARNING IN CALLAWAY COUNTY** GAI-TRONICS ANNOUNCEMENT

"Attention all personnel. Attention all personnel. A tornado warning has been issued for Callaway County. All outside activities should be suspended until further notice. All personnel should be prepared to take cover should the need arise."

(REPEAT ANNOUNCEMENT)

 RADIO ANNOUNCEMENT

(Repeat Gai-tronics announcement)

D. TORNADO WARNING FOR CALLAWAY PLANT - Storm front moving toward the plant or actual sighting of a tornado by plant personnel. SOUND THE PLANT EMERGENCY ALARM GAI-TRONICS ANNOUNCEMENT

"Attention all personnel. Attention all personnel. A tornado warning is in effect for the Callaway Plant. Go directly to a designated tornado shelter area and seek cover."

(REPEAT ANNOUNCEMENT)

 RADIO ANNOUNCEMENT

(Repeat Gai-tronics announcement.)

E. ALL CLEAR GAI-TRONICS ANNOUNCEMENT

"Attention all personnel. Attention all personnel. The (circle one) severe thunderstorm watch / high winds warning / tornado watch / tornado warning is no longer in effect. Continue normal work functions."

(REPEAT ANNOUNCEMENT).

 RADIO ANNOUNCEMENT

(Repeat Gai-tronics announcement.)

TORNADOS!!

**When an announcement is made over the Gai-tronics seek shelter:
Go to the closest area designated below and take immediate cover. Stay away from windows, go to an inside room, and get under a desk or table if you cannot reach your designated shelter area prior to arrival of dangerous weather.**

SERVICE BUILDING	First and second floor personnel: West corridor, Maintenance Office Area, Restrooms & Locker Rooms Room 105, (Reprographics behind the QA vault wall). Third floor personnel: East corridor, NRC office, Telephone rooms.
TRAINING CENTER	Lunch Room, Restrooms, Classrooms 120 and 122
TECHNICAL SUPPORT CENTER	All areas other than near outside doorways
STOREROOM No. 1	QA Non-Conforming Storage Temperature and Humidity Control Room (Note: Building has a metal roof, stay low, and cover head.)
STORES No. 2.	Restrooms in office complex.
ANNEX	Go to ESW Pumphouse
HP CALIBRATION FACILITY	Go to ESW Pumphouse
POWER BLOCK	Auxiliary, Rad Waste, Diesel, and Control Buildings
EMERGENCY OPERATIONS FACILITY	All areas except near outside doorways
CENTRAL PROCESSING FACILITY	Inner hallways, Bathrooms, Mechanical Equip. Room (Note: Building has a metal roof, stay low, and cover head.)
SECURITY OFFICES	Go to the TSC
MAF	Go to MAF basement
OUTAGE MAINTENANCE FACILITY	First floor Restrooms and hallway, tool room
DIC OFFICE BUILDING	First floor interior hallways, bathrooms, and vault.
ALL OTHER AREAS	Go to nearest shelter area, if one can be reached quickly (30-60 seconds). Otherwise take immediate cover in a concrete structure, below ground level area, a corner, or underneath a heavy object such as a desk or table.
IF CAUGHT OUTSIDE AS A LAST RESORT	Take shelter in the nearest ditch or ground depression. Always cover your head -- Remember, most tornado fatalities are from injuries to the head.

**NEVER REMAIN IN TRAILERS OR VEHICLES
DO NOT REMOVE THIS NOTICE FROM THE BULLETIN BOARD.**

SEVERE THUNDERSTORM/HIGH WINDS/TORNADOS DOOR CLOSURE LIST**Section A (Monitored Doors)**

Door #	Building	Level	Type	Description
11021	Auxiliary	1974'	Pressure	Aux. Bldg. to Radwaste Tunnel
11022	Auxiliary	1974'	Pressure	Aux. Bldg. to Radioactive Tunnel
11194	Auxiliary	2000'	Pressure	Aux. Bldg. to Fuel Bldg.
11195	Auxiliary	2000'	Pressure	Aux. Bldg. Outside Door
11273	Auxiliary	2043'4"	Pressure	Aux. Bldg. to MSIV Room
13011	Auxiliary	2000'	Missile	Aux. Bldg. to Outside Door
13012	Auxiliary	2000'	Pressure	Aux. Bldg. to Outside Door
13291	Auxiliary	2000'	Pressure	Turb. Bldg. to AFWP Rms.
13331	Auxiliary	2000'	Missile	Aux. Bldg. to Laundry/Decon Facility
14032	Auxiliary	2026'	Missile	Aux. Bldg. to Comm. Corridor
14081	Auxiliary	2026'	Pressure	Aux. Bldg. to Fuel Bldg.
15041	Auxiliary	2047'6"	Missile	Aux. Bldg. to RAM Storage Bldg.
15071	Auxiliary	2047'6"	Pressure	Aux. Bldg. to Fuel Bldg.
21011	Auxiliary	1974'	Pressure	Aux. Bldg. to Tendon Access Gallery
31011	Control	1974'	Pressure	Control Bldg. to Comm. Corridor
32013	Control	2000'	Pressure	Control Bldg. Outside Door
33012	Control	2000'	Missile	Control Bldg. to Comm. Corridor
33044	Auxiliary	2000'	Missile	Aux. Bldg. to Comm. Corridor
34021	Control	2016'	Missile	Control Bldg. to Comm. Corridor
35021	Control	2032'	Missile	Control Bldg. to Comm. Corridor
38011	Control	2073'6"	Missile	Control Bldg. to Comm. Corridor
41011	Auxiliary	1974"	Pressure	Aux. Bldg. to Turb. Bldg. Stairs
41015	Auxiliary	2026'	Missile	Aux. Bldg. to Turb. Bldg. Stairs
41017	Auxiliary	2047'6"	Missile	Aux. Bldg. to Turb. Bldg. Stairs
52011	Diesel Gen.	2000'	Missile	DG Bldg. Outside Door
52031	Diesel Gen.	2000'	Missile	DG Bldg. Outside Door
61011	Fuel Bldg.	2000'		South Emergency Exit
61021	Fuel Bldg.	2000'		East Emergency Door
61022	Fuel Bldg.	2000'		Roll-Up Door
U1041	ESW	2000'	Pressure	ESW Pumphouse Outside Door
U1051	ESW	2000'	Pressure	ESW Pumphouse Outside Door
U3011	UHS	2000'	Missile	UHS Cooling Tower Outside Door
U3041	UHS	2000'	Missile	UHS Cooling Tower Outside Door
U3061	UHS	2000'	Missile	UHS Cooling Tower Outside Door

Section B (Visually Verified Doors)

Building	Level	Door #	Type	Description
Control	1984'	32201	Pressure	Control Bldg. (HP) to Comm. Corridor
Control	1984'	32282	Pressure	Control Bldg. to Hot Lab
RAM Storage	2047	85011	Pressure	Walk-Out Door to Diesel Gen. Roof
RAM Storage	2047'	85012		Equipment Door to Diesel Gen. Roof
Turbine	2000'	ALL		All Roll-Up and Walk Through Doors
Reactor	2000'		Pressure	Personnel Emergency Hatch

MISSILE SHIELD REQUIREMENTS

MISSILE SHIELD	EST. CLOSURE TIME	WEATHER MONITORING DISTANCE	APPLICABLE MODES	Notes
Rx Building Equipment Hatch MSDSM52	2 hrs	140 mi.	6*	Shield CANNOT be removed in Modes 1, 2, 3, & 4. Bolting <u>not</u> required for closure.
Area 5 (Located in Turb. Bldg.) MSAREA501, 502, 503, 504	1.5 hrs	105 mi.	1, 2, 3	Shields may be opened in Modes 4, 5, & 6. Bolting <u>not</u> required for closure. FPIP required.
D/G Fuel Oil Tanks MSDGA or MSDGB	1 hr	70 mi.	ALL#	Applicable when D/G is operable. Bolting required for closure.
ESW Pumphouse Roof MSESWA or MSES WB	1 hr	70 mi.	1, 2, 3, 4	Shields may be opened in Modes 5, & 6. Bolting required for closure.
ESW Manhole covers MSMH01N or MSMH01S	1 hr	70 mi.	1, 2, 3, 4	Shields may be opened in Modes 5, & 6. Bolting required for closure.
RHR Heat Exchangers MSRHRA or MSRHRB	1 hr	70 mi.	ALL	Applicable when the related RHR train is operable. FPIP Required.

*With Rx Vessel upper internals package removed and fuel assemblies in the Reactor Building.

NOT required for removal of small steel hatch on top of large missile shield.

CLOSURE RESOURCES NEEDED

Rx Building Equipment Hatch	HP Tech., Pedestal Crane Operator, platform rigging, cutting torch, hand tools, Mechanics/Ironworkers, rigging, and shield winches, etc.
Area 5 (Located in Turb. Bldg.)	JLG & rigging if trolley beam is in place, hand tools, cutting torch, chain hoist, "come-a-long", Mechanics/Ironworkers, etc.
D/G Fuel Oil Tanks	>20 ton crane, crane operator, hand tools, rigging, Mechanics. Bolting required for closure.
ESW Pumphouse Roof	>20 ton crane, crane operator, hand tools, rigging, Mechanics. Bolting required for closure.
ESW Manhole covers	>3 ton crane, crane operator, hand tools, rigging, Mechanics. Bolting required for closure.
RHR Heat Exchangers	>12 ton crane, crane operator, hand tools, rigging, Mechanics.