INSPECTION PROCEDURE 71111 ATTACHMENT 01

ADVERSE WEATHER PROTECTION

Effective Date: July 1, 2026

PROGRAM APPLICABILITY: IMC 2515 A

CORNERSTONES: Initiating Events
Mitigating Systems

INSPECTION BASES: See Inspection Manual Chapter (IMC) 0308, Attachment 2

SAMPLE REQUIREMENTS:

Sample Requirements		Minimum Baseline Sample Completion Requirements		Budgeted Range	
Sample Type	Section(s)	Frequency	Sample Size	Samples	Hours
Seasonal Extreme Weather	03.01	Annual*	1 per site	1 to 2 per site	10 to 24 per site
Impending Severe Weather	03.02	Annual**	1 per site	1 to 2 per site	

* Prior to the onset of seasonal extreme weather
** When impending severe weather is anticipated

71111.01-01 INSPECTION OBJECTIVES

01.01 To verify that mitigating systems are not adversely impacted or challenged by adverse weather conditions such as flooding, high winds and extreme temperatures.

01.02 To verify that adverse weather-related problems that could cause initiating events or impact the availability and functional capability of mitigating systems are identified, and resolved consistent with the licensee's design requirements.

71111.01-02 GENERAL GUIDANCE

This inspection procedure should be used to verify that extreme weather-related risks (e.g., high winds, hurricanes, torrential rains, flooding, tornadoes, and seasonal predictable weather conditions such as high or low temperatures) will not adversely affect risk significant systems, components and structures including the ultimate heat sink (e.g., debris, ice blockages, frazil ice, sea grass, fish, etc.), offsite power systems, and alternate AC power sources. When practical, the inspection should be conducted prior to the onset of the adverse weather conditions at the site.

Because of the unique conditions that exist at each site, certain weather-related conditions such as external flooding, high and low temperature conditions may be a transient initiator. As such when preparing for this inspection to identify inspectable areas, inspectors should review the following documents: 1) the Final Safety Analysis Report (FSAR), 2) the Individual Plant Examinations for External Events (IPEEE) report, and 3) the Probabilistic Risk Assessment (PRA) report, to identify those systems/structures that are most likely to be affected by weather-related events. The inspector should also seek input from Senior Reactor Analysts (SRAs) regarding potential site-specific weather-related risk analysis issues. When selecting inspection activities, consider weather-related information gathered during plant status reviews or from external news sources.

For each sample, baseline review of problem identification and resolution activities should be conducted using IP 71152, “Problem Identification and Resolution.”

The following table provides general inspection guidance for sample selection.

Cornerstone	Inspection Objective	Risk Priority	Examples
Initiating Events	Verify that adverse weather-related problems that could cause initiating events or impact the availability and functional capability of mitigating systems are identified, and resolved consistent with the licensee’s design requirements.	For high winds, a high-risk condition could exist for outdoor components such as power supplies, fuel/air lines, and equipment sensing lines.	Adequacy of protection of equipment outside structures from (tornadoes and/or hurricanes) and the removal/securing of high wind generated missiles such as plywood and scaffold poles.
		For flooding events, a high-risk condition could exist if risk significant structures, systems and components are rendered nonfunctional due to water intrusion.	Adequacy and functionality of water-tight doors, flood barriers, check valves that are credited for isolation of flood areas and anti-siphon features used to prevent external flooding egress, block wall seals, internal and external sump pump systems, and alarms. Adequacy of procedures driving operator actions in preparation for external flooding events.

Cornerstone	Inspection Objective	Risk Priority	Examples
		For extreme weather, a high-risk condition could exist due to potential grid stress and disturbances	Adequacy of site preparations to ensure debris do not impact off-site power lines. Emergency power systems are available to supply power to plant equipment if offsite power is not available.
Mitigating Systems	Verify mitigating systems are not adversely impacted or challenged by adverse weather conditions such as flooding, high winds and extreme temperatures.	For cold weather, high risk conditions could exist for components/sensing lines located in areas exposed to outside weather (including areas with natural air intake/ventilation). For hot weather, high risk conditions could exist for components in areas with low ventilation margins, and for heat exchangers due to clams/mussel intrusion, including accumulation of microorganisms, plants, algae, and small animals.	Adequacy of heat tracing and space heaters for cold weather protection of piping and equipment (e.g., refueling water storage tank (RWST)/condensate water storage tank level, steam generator/main steam line pressure and flow, and feedwater flow sensing lines, fire suppression systems, minimum flow path return lines for safety injection pumps to the RWST, cooling lines for service water pumps, or ultimate heat sink cooling water supply (protection from frazil ice or intake structure blockage due to debris, including ice). Adequacy of site ventilation systems and the site marine biofouling treatment and monitoring program. The biofouling program may be inspected using IP 71111.24, “Testing and Maintenance of Equipment Important to Risk.”

Cornerstone	Inspection Objective	Risk Priority	Examples
		Plant modifications, new evolutions, procedure revisions, or operator workarounds implemented to address periods of adverse weather if not properly designed and implemented may adversely impact mitigating systems.	Adequacy of the safety evaluation for the modification or change and supporting procedures. Temporary modifications and procedure adequacy can be reviewed using the guidance contained in inspection procedures 71111.04, “Equipment Alignment” and 71111.11 “Licensed Operator Requalification Program and Licensed Operator Performance.”

71111.01-03 INSPECTION SAMPLES

03.01 Seasonal Extreme Weather.

Verify the adequacy of the licensee seasonal readiness prior to the onset of seasonal extreme weather conditions.

Specific Guidance

a. Consider reviewing seasonal extreme weather preparation procedures (e.g., extreme high temperatures, extreme low temperatures, high water flooding conditions or hurricane season preparations).

b. Consider reviewing knowledge management training sessions in Nuclepedia that discuss the NRC response to external events that have occurred at plant sites. Suggested sessions include the NRC response to Hurricane Ida and a retrospective review of the Fort Calhoun flooding event.

c. Consider reviewing industry operating experience/NRC Generic Communications located on the NRC OpE hub that discuss potential structural and system issues related to flooding such as the adequacy and functionality of water-tight doors, flood barriers, block wall seals, including the functionality of internal and external sump pumps, alarms systems and power supplies.

d. Consider if seasonal weather-related equipment deficiencies identified during the previous year have been corrected prior to the onset of seasonal extremes. Legacy IP 71111.06, “Flood Protection Measures” has additional flood related inspection guidance that may also be useful.

e. Review implementation of seasonal extreme weather preparation procedures and compensatory measures for the seasonal extremes. Consider accessibility of controls, indications, and equipment both permanently installed and temporary equipment staged for use.

f. For a summer readiness inspection sample, consider review of the material condition of the plant’s ventilation systems (e.g., fans/filters/dampers and/or air conditioning and associated controllers), offsite AC power systems and onsite alternate AC power systems, including the switchyard and transformers. Consider reviewing outstanding work orders, condition or problem reports.

g. For each seasonal weather sample, select either two to four risk significant systems or two to four risk significant structures that are required to be protected from the seasonal extreme weather conditions and examine the systems and tour the strucutures. As part of the sample selection, review the UFSAR, technical specifications, and plant documents associated with these systems and/or structures and consider assessing the following:

   1. The selected systems, structures or components will remain operable/functional when challenged by seasonal extreme weather conditions. For example, offsite power lines will not be damaged by loose sheet metal from a building façade during high winds.

2. As applicable, verify plant features and procedures for operation and continued availability of the ultimate heat sink (i.e., river, lake, and ocean) during seasonal extreme weather conditions are appropriate to address expected conditions such as frazil ice buildup or debris impingement on intake systems and components.

   As part of the review, consider the licensee's plans to address the ramifications of potentially lasting effects of seasonal extreme weather conditions (e.g., drought, flood, extreme cold weather). Verify the ultimate heat sink maximum and minimum temperature limits, as specified in the technical specifications and/or UFSAR, are appropriately and conservatively translated into system operating procedures, alarm response procedures, operability guidance, and design-basis calculations.

3. As applicable, verify cold weather protection features, such as heat tracing, space heaters, and weatherized enclosures are monitored sufficiently to ensure that they support operability/functionality of the system, structure, or component (SSC) they protect. This includes instrument controller and alarm calibration programs, as necessary, to support the cold weather protection function. During extended periods of high or low temperatures, verify vital plant areas (e.g., Emergency Core Cooling System pump rooms, containment or drywell, electrical switchgear rooms, and diesel rooms) cooled directly/indirectly by process mediums affected by external environmental conditions are adequately maintained within design basis limits. This includes consideration for instrument accuracy to support conservative and timely operator action to ensure adequate margin to design basis limits. As appropriate, consider performing a walkdown to verify the physical condition of the weather protection features.

4. As applicable for potential external flood inspection activities, consider the following:

   Flood Seals and Barriers

   - Sealing equipment below the design basis flood elevation, such as electrical conduits. Consider if the service life of seals is consistent with the manufacturer's recommendations or whether a documented engineering evaluation provides justification for service life beyond the manufacturer's recommendations.

   - Sealing of equipment floor plugs, holes or penetrations in floors and walls between flood areas. Consider if procedures or programs to monitor for degraded conditions have been implemented.

   - Adequacy of watertight doors between flood areas. Consider alignment of "dog ears," adequacy of seals, and wear or impact damage on critical parts of the doors.

   - Condition and availability of temporary or removable flood barriers (i.e., gaskets, sandbags, or sand baskets).

   - Flood barrier impairment tracking and compensatory measures.

   - Protection of access to the ultimate heat sink for safe shutdown from storm surge debris impact (external flooding).

Drainage Systems and Sumps

- Common drain system and sumps, including floor drain piping and check valves where credited for isolation of flood areas within plant buildings.
- Drain systems have adequate protection (screens/covers) to prevent debris from disabling the drain system or components in the drain system.
- Operable sump pumps, level alarm and control circuits including maintenance and calibrations of flood protection equipment.
- Anti-siphon features, such as check values and vacuum breaks, used to prevent external flooding ingress.
- External perimeter drain systems that are designed to minimize the egress of rain and flood water into safety-related plant areas are functional.

5. Operator actions defined in the licensee's seasonal extreme weather procedure maintain readiness of essential systems. Minimum/adequate operator staffing is specified.

6. Systems and/or components required for a reactor shutdown and affected by the seasonal extreme weather conditions are available to perform their reactor shutdown functions under assumed conditions.

7. As applicable, the licensee can demonstrate through testing or analysis that diesel fuel oil Cloud Point[1] and viscosity specifications are acceptable for operability of diesel generator systems with above ground fuel storage tanks (e.g., emergency diesel generators, station blackout diesel generators, security diesels, fire protection diesel generators, etc.) during extreme cold weather conditions.

03.02 Impending Severe Weather.

Verify the adequacy of the overall preparations to protect risk-significant systems from impending severe weather.

Specific Guidance

a. Consider evaluating implementation of appropriate severe weather preparation procedures and compensatory measures for the severe weather that is currently impacting or is expected to imminently impact the facility, its operations, or the ability of personnel to respond to an emergency. Consider reviewing the licensee's plans to address the ramifications of potentially lasting effects that may result from the severe weather conditions (e.g., drought, flood).

b. Consider if severe weather procedure operator actions maintain the readiness of essential systems. Verify that minimum/adequate operator staffing is specified. Consider

[1] Cloud Point defines the temperature at which a cloud or haze of wax crystals appears in the oil under prescribed test conditions, which generally relates to the temperature at which wax crystals begin to precipitate from the oil in use. [Source: ASTM D-975]

accessibility of controls, indications, and equipment for both permanently installed and temporary equipment staged for use.

c. Consider if required surveillances are current, or are scheduled and completed, if practical, before anticipated severe weather conditions develop.

d. Consider the status of safety related equipment, to ensure inoperable equipment does not prompt a Notice of Enforcement Discretion (NOED) request. Note: The Enforcement Policy provides for the exercise of enforcement discretion under circumstances in which maintaining the stability and reliability of the electrical power supply system is consistent with protecting the public health and safety. As background, weather-related NOED requests usually result from a missed surveillance, an improperly scheduled surveillance, or inoperable equipment.

e. Consider review of plant modifications, maintenance activities (i.e., temporary hazard barrier removal), new evolutions, procedure revisions, or operator workarounds implemented to address periods of adverse weather that can inadvertently affect maintenance rule systems and SSCs. Consider if the licensee has assessed and managed these challenges to safe plant operation. Further follow-up may be appropriate using IP 71111.13, "Maintenance Risk Assessments and Emergent Work Control"; and IP 71111.15, "Operability Determinations and Functionality Assessments."

71111.01-04 REFERENCES

IMC 2515, Appendix A, "Risk-Informed Baseline Inspection Program"

IMC 0308, Attachment 2, "Technical Basis for Inspection Program"

IP 71111.04, "Equipment Alignment"

IP 71111.11 "Licensed Operator Requalification Program and Licensed Operator Performance"

IP 71111.06, "Flood Protection Measures"

IP 71111.13, "Maintenance Risk Assessments and Emergent Work Control"

IP 71111.15, "Operability Determinations and Functionality Assessments"

IP 71111.24, "Testing and Maintenance of Equipment Important to Risk"

IP 71152, "Problem Identification and Resolution"

Nuclepedia - Coordinated Regional Reactor Weekly Knowledge Managment Training Seminars

Cross-Reference of Generic Communications to IP 71111.01 and Inspection Resources, available at Microsoft Power BI (powerbigov.us) (nonpublic)

END

Attachment 1: Revision History for IP 71111.01

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-decisional, Non-public Information)
	04/03/00 CN 00-003	71111.01 has been issued to provide the minimum inspection oversight for determining the safety performance of operating nuclear power reactors.		
	ML020380469 01/17/02 CN 02-001	IP 71111.01 has been revised to provide detailed inspection requirements and guidance for evaluating a licensee's readiness for seasonal susceptibilities and impending weather conditions. In addition, the inspection resource estimate is revised to provide a band for more inspection flexibility.		
	ML041050003 04/13/04 CN 04-008	IP 71111.01 has been revised to clarify sample sizes, minimum samples for completion and improve guidance provided in the inspection requirements.		
	03/02/07	Revision history reviewed for the last 4 years		
C1 SRM M050426	ML070240487 03/23/07 CN 07-011	IP 71111.01 has been revised to address feedback form 71111.01-902 to include recommended inspection guidance and also to incorporate inspections for the offsite power system and the alternate AC power source.	Training performed at resident inspector counterpart meetings and completed on 12/13/06.	ML070670471
	ML072960230 01/31/08 CN 08-005	IP 71111.01 has been revised to reflect the 2007 Reactor Oversight Process (ROP) realignment (addition of external flooding review formerly in IP 71111.06) and to address feedback form 71111.01-1163.		ML073520325

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-decisional, Non-public Information)
	ML080650308 05/01/08 CN 08-013	IP 71111.01 has been revised to address feedback form 7111.01-1150 to include recommended clarification of inspection guidance regarding offsite power grid reliability verification. Revisions have also been made to include consideration for drought ramifications and to reorganize the inspection requirements.		ML081220121
	ML083170657 04/09/09 CN 09-011	IP 71111.01 has been revised to clarify the expectations for performing the grid reliability sample (FBF 71111.01-1305).		ML090700219
	ML092290690 11/09/09 CN 09-026	IP 71111.01 has been revised based on the 2009 ROP realignment (adjustment of resource estimate and clarification of sample requirements).		
	ML14337A104 12/04/14 CN 14-029	Editorial change based on FBF 71111.01-2043. Deleted Subsection 2.04.c.7, “Sources of potential internal flooding that are not analyzed or not adequately maintained, for example failure of flexible piping expansion joints, failure of fire protection system sprinklers, roof leaks, rest room backups, and failure of service water lines,” which is already in IP 71111.06 and not needed in IP 71111.01.		ML14324A635 71111.01-2043 ML14324A635
	ML14343A684 09/04/15 CN 15-016	Incorporated Fukushima lessons learned (06/12/13 meeting) and Fukushima flooding inspection insights. Revised to incorporate FBF 71111.01-2130.		ML15215A044 71111.01-2130 ML15246A215
	ML17101A803 11/28/17 CN 17-027	Added additional ultimate heat sink considerations to “Summer Readiness” sample. Eliminate redundancy and improved for plain writing. Relocated optional requirements to the guidance section to better align with IMC 2515, Section 8.04, sample completion requirements.		ML17164A302 71111.01-2220 ML17200C868

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-decisional, Non-public Information)
	ML18278A281 12/20/18 CN 18-044	Changed seasonal extreme weather baseline sample requirement to prior to the onset of seasonal extreme weather.		ML18288A004 71111.01-2336 ML18288A013
	ML19291A217 12/20/19 CN 19-041	Specified sampling requirements for AP1000 units. Deleted Summer Readiness sample and reduced budget estimate by 6 hours. Commitment C1 was decommitted though SECY-19-0067 (ML19070A036).		ML19316B051
N/A	ML22066B308 08/01/22 CN 22-015	Samples revised per NRR direction using Enclosure 2 (ML19070A040) of SECY-19-0067 (ML19070A050) as guidance. Updated references and plain writing guidance in accordance with IMC 0040.	None	N/A Issued as final.
	ML25357A199 05/01/26 CN 26-017	Added enhanced external flood inspection guidance derived, in part, from IP 71111.06, “Flood Protection Measures,” an inspection procedure that will be cancelled. Adjusted inspection guidance to state that seasonal inspection samples should be risk informed and selected based upon the seasonal weather hazards that exist at a site. These revisions were recommended as a result of the ADVANCE Act 507 Report to Congress that discussed the revision of the ROP Baseline Inspection Program and are summarized in ML25247A050.	None	ML25274A088