

NRC INSPECTION MANUAL

IRIB

INSPECTION PROCEDURE 71111 ATTACHMENT 01

ADVERSE WEATHER PROTECTION

Effective Date: January 1, 2023

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.

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.

71111.01-02 GENERAL GUIDANCE

This inspection procedure should be used to inspect weather-related risks (e.g., high winds, hurricanes, torrential rains, electrical storms, tornadoes, extreme high or low temperatures) adversely affecting 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 performed prior to the onset of adverse weather conditions at the site.

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

Sample Considerations

<p>Inspection Objective: To verify that mitigating systems are not adversely impacted or challenged by adverse weather conditions.</p>	
Conditions and Potential Risk Impacts	Examples
<p>For high winds, high risk exists for outdoor components, including power supplies, fuel/air lines, and sensing lines.</p>	<p>Adequacy of protection of equipment outside structures from high winds (tornadoes and/or hurricanes) and high wind generated missiles.</p>
<p>For cold weather, high risk exists for components/sensing lines located in areas exposed to outside weather (including areas with natural air intake/ventilation) or located outside structures.</p>	<p>Adequacy of heat tracing and space heaters for cold weather protection of piping and equipment (e.g., refueling water storage tank (RWST)/condensate 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).</p>
<p>For hot weather, high risk exists for marine fouling of various heat exchangers due to clams/mussels, etc.</p>	<p>Adequacy of site marine biofouling treatment and monitoring program. This area may be inspected using IP 71111.07, "Heat Exchanger/Sink Performance."</p>
<p>Plant modifications, new evolutions, procedure revisions, or operator workarounds implemented to address periods of adverse weather.</p>	<p>Adequacy of safety evaluation for modification or change.</p>
<p>For extreme weather, high risk exists due to potential grid stress and disturbances.</p>	<p>Adequacy of communication protocols between transmission operator and the NPP to verify appropriate information is conveyed when issues arise that could impact offsite power system or alternate AC power source.</p>

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 review of** seasonal extreme weather preparation procedures (e.g., extreme high temperatures, extreme low temperatures, or hurricane season preparations).
- b. **Consider if** weather-related equipment deficiencies identified during the previous year have been corrected prior to the onset of seasonal extremes.
- c. **Consider** implementation of the seasonal extreme weather preparation procedures and compensatory measures for the seasonal extremes. Consider accessibility of controls, indications, and equipment.
- d. For summer readiness, **consider review of** the material condition of the plant's offsite AC power systems and onsite alternate AC power systems, including the switchyard and transformers. **Consider review of** outstanding work orders.
- e. **Consider selection of** two to four risk-significant systems that are required to be protected from the seasonal extreme weather conditions. **Consider review of** the updated final safety analysis report (UFSAR), technical specifications, and plant documents associated with these systems and then **consider assessing** the following:
 1. **The** selected systems or components will remain operable/functional when challenged by seasonal extreme weather conditions.
 2. As applicable, 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. **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). As applicable, **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. During extended periods of high or low temperatures, **the** 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. Independently verify by walkdowns where possible. This includes consideration for instrument accuracy to support conservative and timely operator action to ensure adequate margin to design basis limits.
 3. As applicable, 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. As appropriate, **consider performing** a walkdown **to** verify the physical condition of weather protection features.
4. **Operator** actions defined in the licensee's seasonal extreme weather procedure maintain readiness of essential systems. **Minimum** / adequate operator staffing is specified.
 5. **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.
 6. As applicable, the licensee can demonstrate through testing or analysis that diesel fuel oil Cloud Point¹ 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 review of** 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 accessibility of controls, indications, and equipment.
- 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 and 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. Weather-related NOED requests usually involve a missed surveillance, an improperly scheduled surveillance, or inoperable equipment.

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]

- 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 71111.12, "Maintenance Effectiveness"; IP 71111.13, "Maintenance Risk Assessments and Emergent Work Control"; IP 71111.15, "Operability Determinations and Functionality Assessments"; and IP 71111.18, "Plant Modifications."

71111.01-04 REFERENCES

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

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

IP 71111.07, "Heat Exchanger/Sink Performance"

IP 71111.12, "Maintenance Effectiveness"

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

IP 71111.15, "Operability Determinations and Functionality Assessments"

IP 71111.18, "Plant Modifications"

IP 71152, "Problem Identification and Resolution"

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 four 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

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	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

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)
	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
	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.