# NRC INSPECTION MANUAL

IRIB

INSPECTION MANUAL CHAPTER 0308 ATTACHMENT 2

TECHNICAL BASIS FOR INSPECTION PROGRAM

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## 1 INTRODUCTION

The power reactor inspection program is composed of several elements to provide indication of licensee performance. The key feature of the program is the baseline inspection program, which defines the minimum level of inspection that all plants will receive regardless of performance. The supplemental inspection program is performed to independently evaluate the root causes of performance deficiencies when indications of declining licensee performance are obtained through either the performance indicators (PIs) or other inspections (principally the baseline inspection program). Plant events are inspected to determine their significance and to determine the agency's necessary response. Plants in extended shutdowns due to performance problems are inspected and assessed by a separate inspection process (i.e., IMC 0350) because many of the PIs and much of the baseline inspection program would not be applicable.

The risk-informed baseline inspection program for power reactors defines the minimum level of planned inspections to evaluate licensee performance over a 12-month period. The overall objective of the program is to monitor all power reactor licensees at a defined level of effort to assure licensees' performance meets the objectives for each cornerstone of safety. These cornerstones support the agency's performance goals in the NRC's Strategic Plan.

## 2 METHODOLOGY FOR IDENTIFYING INSPECTABLE AREAS

The objective in revising the inspection program was to develop a baseline program that is risk-informed and performance-based that identifies the minimum level of inspection required for a plant (regardless of performance) to give the NRC sufficient information to determine whether plant performance is acceptable. A key input to this effort was the regulatory framework and the cornerstones of safety, which are areas of reactor functions or licensee activities that must be performed to a certain set of objectives to ensure that the NRC's mission is met.

The baseline inspection program was developed using a risk-informed approach to determine a comprehensive list of areas to inspect (inspectable areas) within each cornerstone of safety. These inspectable areas were selected based on their risk significance (i.e., they are needed to meet a cornerstone objective as derived from a combination of probabilistic risk analyses insights, operational experience, deterministic analyses insights, and regulatory requirements). The scope of inspection within each inspectable area was determined using the same risk-informed approach. The scope of inspection was also modified by the applicability of a PI. The more fully an indicator measures an area, the less extensive is the scope of inspection.

## 3 BASELINE INSPECTION PROGRAM

The baseline inspection program contains certain concepts that are a change in the approach to conducting inspections from the previous core inspection program. The key concepts are summarized below:

- The baseline program is the minimum level of inspection conducted at all power reactor facilities, regardless of their performance. Licensees performing at a level not requiring additional NRC interaction will only be inspected at the baseline inspection level of effort.
- Inspections of performance issues beyond the baseline program are termed supplemental inspections. This increased inspection effort is based on criteria specified in the assessment program to address declining licensee performance and is not included in the baseline program.

- The scope of the baseline program is defined by inspectable areas linked to the cornerstones of safety. The justification for inclusion of the inspectable area in the baseline program is described in this basis document.

- The baseline program has four parts: (1) inspection in inspectable areas in which PIs are not identified and/or in which PIs do not fully cover the inspectable area; (2) ongoing verification of the information provided in PIs; (3) comprehensive review of licensee effectiveness in identifying and resolving problems, and (4) initial follow up to plant events and degraded conditions to determine their safety significance.

- The process for planning inspections will be conducted in accordance with IMC 305, "Operating Reactor Assessment Program."

Risk has been factored into the baseline inspection program in four ways: (1) inspectable areas are based on their risk importance in measuring a cornerstone objective, (2) the inspection frequency, how many activities to inspect, and how much time to spend inspecting activities in each inspectable area is based on risk information, (3) the selection of activities to inspect in each inspectable area is based on plant-specific risk information, and (4) inspectors are trained in the use of risk information.

A panel consisting of Inspection Program Branch and senior regional managers and their staff developed the sample size and the number of inspection hours expected to be necessary to complete each of the inspection procedures, at the inception of the reactor oversight program (ROP). Sample size and number of hours were developed based on their expert judgement and relevant risk information on how much inspection activities would be sufficient to ensure verification that the licensee was meeting the objectives of all seven cornerstones.

After the first year of implementation of the new ROP, regional management and inspectors raised concerns regarding the lack of flexibility in the ROP inspection requirements for both sample size requirements and number of hours for each inspectable area. They were concerned with their ability to apply their inspection focus into areas they felt needed more or less inspection effort based on their overall knowledge of a specific plant. As a result, in consultation with regional management, the Inspection Program Branch changed the original sample size from a single value to a range of values which were -15% to +15% of the original sample size. The original sample size is the nominal or average of the -15% and +15% values.

The idea was that any individual plant inspection program could then be adjusted within these relatively limited ranges based on the plant-specific insights of the inspectors, but that at a nationwide program level, the average (i.e., mean) level of samples and effort would continue to fall in about the middle of these ranges. As experience with the ROP was accumulated, it was felt that these program average values and ranges could then be adjusted as needed while still retaining an appropriate degree of flexibility to accommodate plant-specific inspection focus needs.

Appendix A to Inspection Manual Chapter 2515 contains a list of baseline inspection procedures and specifies the required frequency for their performance. The baseline inspection procedures must be completed at every plant at a prescribed interval. In certain cases, completion of some inspection requirements may be accomplished through other inspections. The expectation is that the regions should normally complete the nominal (average) number of inspection samples identified in the inspection procedure. The regions may vary the inspection samples within the

ranges as indicated in each baseline inspection procedure, based on the licensee performance and inspector insights. For the purposes of completing the baseline inspection program, the number of samples completed must be within the range of values specified in each inspection procedure.

Similar changes were made to the inspection hours in order to maintain the relationship between the level of inspection resources necessary to complete the inspection activities and the range of inspection samples which could be accomplished with each inspection procedure constant.

The program is indicative and not diagnostic. The baseline program delineates specific inspection activities to evaluate aspects of licensee programs and processes and their implementation by identifying findings that are indicative of licensee performance problems. Inspection findings from the baseline program are evaluated for significance and used, along with PIs, to assess licensee performance within the cornerstones of safety. The baseline inspections are not diagnostic assessments of licensee performance leading to a root cause determination. Those assessments and root cause determinations are intended to be reviewed or independently made during supplemental inspections that are outside the scope of the baseline inspection program.

The safety performance of nuclear power plants is assessed based on performance in each cornerstone of safety. Verifying that a licensee meets the objectives of the cornerstones provides reasonable assurance that public health and safety are protected. The inspectable areas verify aspects of the key attributes for each of the associated cornerstones. The cornerstones to which each inspectable area is applicable and their link to the attributes they are measuring are depicted in Table 1 of this Attachment and exhibits 3 through 11 of IMC 0308. Therefore, the baseline inspection program requires that most inspectable areas be reviewed at each nuclear power plant each year. Several inspectable areas are reviewed at longer frequencies.

All the important aspects of a cornerstone area are inspected where a PI has not been established (e.g., design). In cornerstone areas where the PIs provide only limited indication of performance, the inspectable areas provide indication of the aspects not measured (e.g., operator performance during an event). If performance of the cornerstone objective in a cornerstone area is sufficiently measured by a PI, the inspection effort in the baseline program only verifies that the PI is providing the intended data.

Figures 1 through 34 describe the scope of each inspectable area and explain the basis for why each inspectable area is included in the baseline program. Reasons for inclusion in the program may be that: (1) the area is linked to the NRC's mission, (2) the inspectable area involves a key attribute to a cornerstone of safety, and (3) risk information justifies including the area in the baseline inspection program. These inspectable area basis summary sheets discuss the basis for each inspectable area and include risk insights (from generic risk analyses and studies), analyses of significant precursor events, and the risk-informed judgment of an expert panel of inspectors and risk analysts. The summary sheet for each inspectable area also identifies whether a PI applies to the area and what inspections may be needed in addition to the information provided by the PIs in the area. The baseline inspection procedures are written to focus on the more risk-significant aspects of the inspectable areas as discussed in the summary sheets, aspects that directly support the desired results and promote the important attributes of the cornerstones of safety. The scope of any associated PIs are summarized in the inspectable area portions of the baseline inspection procedures.

The figures related to the physical protection inspection procedures were removed because of the Commission's decision that certain security information will no longer be publicly available.

In addition to the inspectable areas identified for many of the key attributes of each cornerstone of safety, the baseline inspection program also consists of inspection activities devoted to: (1) PI verification, (2) problem identification and resolution, (3) event follow-up, and (4) plant status. As discussed below, Figures 35 through 43 describe the scope and basis for these inspection activities and other inspection program policies and practices (e.g., Inspection Manual Chapter [IMC] 2515).

3.1 PI Verification

The monitoring of plant performance primarily relies on information provided by PIs and inspection findings in areas not measured, or not adequately measured, by PIs. The baseline inspection program will also selectively collect and review licensee plant-specific raw data on a periodic basis to independently verify the accuracy and completeness of the PI data.

Each PI is verified annually. The annual verification compares the reported PI data to samples of raw data available (e.g., operating logs, corrective action program records, maintenance records). Some PIs can be verified in conjunction with other baseline inspections if the PI is difficult to accurately verify from plant records. The PI verification inspection also reviews corrective action program records to determine if any problems the licensee may have had in collecting PI data were adequately resolved and updates provided to the NRC.

If a PI is found to be invalid based on inaccurate or incomplete data, then the associated cornerstone may not be adequately evaluated, and additional inspections within the areas measured by the PI are scheduled. The baseline inspection program also provides guidance for NRC actions in response to incomplete or unreported PIs.

Figures 35 and 36 describe the scope and basis for: (1) the NRC response to discrepant or unreported PI data and (2) PI verification inspection activities, respectively.

3.2 Problem Identification and Resolution

The primary means by which licensees maintain an appropriate level of safety is through an effective problem identification and resolution (PI&R) program to correct deficiencies involving human performance, equipment, programs, and procedures. The NRC's confidence in the effectiveness of these programs is the basis for the NRC's policy of closing lower level violations when they are entered into the licensee's corrective action program without independently verifying the final corrective actions. The inspection program verifies that our confidence in licensees' programs is still deserved and periodically verifies the final actions on some of the lower level violations are proper.

The process for evaluating PI&R consists of a performance-based review of the licensees' deficiency reporting process, self-assessments, quality assurance audits, causal analyses of events, and corrective actions. The review of corrective actions includes following them up to validate their effective implementation. The NRC reviews the licensee's activities in this area to verify that: (1) the scope of licensees' identification and resolution programs bounds the key attributes in the cornerstones; (2) causes of problems and issues have been properly determined and corrective actions are timely and effective; and (3) the generic implication or extent of condition has been appropriately considered. Issues identified regarding the licensee's

implementation of its corrective action program are assessed for risk significance using the Significance Determination Process (SDP).

The NRC program to review activities in this area has four parts. The first part is conducted during inspection of the associated inspectable areas within each cornerstone. The second part is a semiannual trend review. The third part is a sample of issues that are selected annually for more in-depth review. The fourth part is a biennial review of the licensee's PI&R programs. The biennial review complements the reviews done throughout the year. The results of the biennial review are then integrated with the PI&R insights gained via the other inspections.

NRC inspectors use licensees' self-assessments to help direct these baseline inspections into worthwhile areas. However, licensees' self-assessments will not be used to reduce or replace baseline inspections. Figure 37 provides additional information on the scope and basis for PI&R inspections.

### 3.3 Event Follow-up

The NRC normally follows up plant events in three ways: (1) events of low safety significance receive minimal follow up, usually by the resident inspectors, (2) events of moderate safety significance receive more follow up, often by one or two regional inspectors, and (3) events of greater safety significance are followed up by a special team. The baseline program is designed to initially screen all operational events and licensee event reports and to follow up only some of the more routine, noncomplex events. The baseline program includes a procedure for event follow-up to be used in conjunction with inspections in the various inspectable areas. Whether to follow up other events with regional discretionary resources would depend on the significance of the event as determined by the baseline inspection program.

Events of low safety significance, such as uncomplicated reactor trips, are reviewed by resident or region-based inspectors to verify that the events are not complicated by conditions such as loss of mitigation equipment or operator errors. The baseline inspection program's event follow-up procedure focuses the inspector's initial evaluation of events on communicating details regarding the event to risk analysts for their use in determining risk significance. Inspectors will identify equipment malfunctions and unavailability, operator errors, and other complications.

The follow-up of more extensive, nonroutine events is outside of the scope of the baseline inspection program and would be performed with reactive inspection resources. The decision to follow up such events would be made on a case-by-case basis by NRC regional management and as directed by senior NRC management in accordance with NRC Management Directive (MD) 8.3, "NRC Incident Investigation Procedures." Significant operational events (defined in MD 8.3) are followed up by a graded response consisting of inspections such as those conducted by Incident Investigation Teams (IITs) and Augmented Inspection Teams (AITs), and Special Inspections (SIs). Follow-up of these events is discussed in more detail later in this Attachment.

Figure 38 provides additional information on the scope and basis of event follow-up activities performed as part of the baseline inspection program.

### 3.4 Plant Status

The primary objective of the plant status activities is to ensure that the inspectors are aware of current plant conditions and equipment problems and have a level of understanding of the risk

significance of proposed or ongoing operations, maintenance, and testing by the licensee. Plant status focuses on identifying and understanding emergent plant issues, current equipment problems, and ongoing activities and their overall impact on plant risk. These activities also provide an independent assessment of the licensee's effectiveness in entering program, system, and component deficiencies into the corrective action program.

The plant status portion of the inspection program is important because it will be used by the inspectors in the risk-informed process to select inspection samples and to modify the scope and depth of inspections in other inspectable areas that support assessment of all cornerstone areas. This awareness of plant conditions, emerging problems or work, and activities planned by the licensee is used by the inspectors in determining which inspection procedures to use and the specific samples for inspections within the inspectable areas of the baseline inspection program. Therefore, since plant status is conducted in part to prepare for other baseline inspection activities, this effort is not considered part of the direct inspection effort under the baseline program.

Figure 43 provides additional detail regarding the scope and basis of the plant status activities performed under the baseline inspection program.

## 4 SUPPLEMENTAL INSPECTION PROGRAM

The supplemental element of the inspection program was designed to apply NRC inspection resources in a graded manner when risk significant performance issues are identified, either by inspection findings evaluated using the SDP or when PI thresholds are exceeded. Depending on the risk significance and breadth of the identified performance issues, the supplemental inspections provide a range of activities including: oversight of the licensee's root cause evaluation of the issues; expansion of the baseline inspection sample or a focused team inspection (as necessary to evaluate extent of condition); or a broad scope multi-disciplined team inspection which would include inspection of multiple cornerstone areas and inspection of cross-cutting issues. Any new performance issues identified during the supplemental inspections are evaluated by the SDP, and new findings issued. The need for additional NRC actions, including additional supplemental inspections, are governed by the assessment program Action Matrix.

At the lowest level, the intent of supplemental IP 95001, "Supplemental Inspection Response to Action Matrix Column 2 Inputs," is to review and selectively challenge aspects of the licensee's root cause evaluation, but not to perform an independent assessment of the performance issue. However, the identification by the NRC of significant issues pertaining to the adequacy of the licensee's root cause evaluation may result in the expansion of the procedure as necessary to independently complete the inspection requirements. Also, the original performance issue, which is currently retained in the assessment process for a year, will not be removed from consideration of actions in the Action Matrix until the weaknesses identified during the supplemental inspection are addressed and corrected.

The objective of supplemental IP 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," is not only to review and selectively challenge aspects of the licensee's root cause evaluation, but to also independently assess the extent of condition for the individual and collective risk significant performance issues that warranted this supplemental inspection.

In general, all inspection requirements contained in these two procedures are intended to be addressed for each issue; however, the extent that they are reviewed and their specific applicability to the given issue will necessarily vary. The staff determined that this level of flexibility was necessary given the various issues that potentially could lead to supplemental inspections.

Also, these two supplemental inspections are intended to provide the information the NRC needs in order to assess safety. The NRC can acquire this information by performing independent inspections or can acquire the information by reviewing the licensee's efforts to assess the root cause of the issue. If the licensee chooses not to provide some of the information needed to satisfy the inspection requirements, the NRC always has the option of acquiring this information by independent inspection.

At the highest level, supplemental IP 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," is intended to determine the breadth and depth of safety, organizational, and programmatic issues. This supplemental procedure is more diagnostic than indicative, and includes reviews of programs and processes not inspected as part of the baseline inspection program. While the procedure does allow for focus to be applied to areas where performance issues have been previously identified, the procedure requires that some sample reviews be performed for all key attributes of the effected strategic performance areas. The rational behind this is that additional NRC assurance is required to ensure public health and safety, beyond that provided by the baseline inspection program and the PIs at those facilities where significant performance issues have been identified. The results of this inspection will aid the NRC in deciding whether additional regulatory actions are necessary to assure public health and safety. These additional regulatory actions could include orders, confirmatory action letters, or additional supplemental inspections, as necessary to confirm that corrective actions to the identified performance concerns have been effective.

Figures 44 through 46 provide additional information on the scope and basis for each of the supplemental inspection procedures.

## 5 EVENT RESPONSE

MD 8.3 provides the criteria for NRC investigatory response to significant operational events involving reactor and non-reactor facilities licensed by the NRC. The criteria define several levels of response, including an IIT and AIT. IITs inspect events having greater health and safety significance than events inspected by AITs.

As part of the development of the new reactor oversight process (ROP), MD 8.3 was revised to risk-inform the deterministic criteria for event response at reactor facilities. The previous deterministic criteria for IITs and AITs is now evaluated in conjunction with risk in order to identify a graded response, based in part on the risk metric. The graded response will consist of an IIT, AIT, and Special Inspection for the lowest level of response. The risk metric of conditional core damage probability (CCDP) is used to best reflect the full extent of any loss of defense-in-depth due to the event, regardless of whether the cause is due to licensee performance or otherwise. Numerical risk estimation by itself is not meaningful unless accompanied by an understanding of the most influential related assumptions and uncertainties.

One comment received during ROP development was that the risk evaluation to support a prompt NRC determination of the level of response will be hampered by lack of information in

the early stages of the event. In addition, information from the NRC event response inspection may significantly revise the risk value and thereby require a different level of NRC response. This problem stresses the need to use the deterministic criteria in conjunction with risk insights. In addition, the program will retain the flexibility, similar to the current oversight process, to revise the level of response based on new information and changing risk levels.

Figure 47 provides additional information regarding the scope and basis for the Special Inspection level of event response.

## 6 OVERSIGHT OF PLANTS IN EXTENDED SHUTDOWN

During the development of the new ROP, the staff also significantly revised its process for overseeing plants in an extended shutdown for performance problems. This process was risk-informed through new criteria that better focuses agency attention on those safety significant issues that contributed to the shutdown. These changes also made the process more objective by using the Action Matrix and SDP to establish criteria and thresholds for actions. The new guidance for plants in extended shutdowns for performance problems was incorporated into a revision to IMC 0350, "Staff Guidelines for the Assessment and Review of Plants that Are Not Under the Routine Reactor Oversight Process." The title for IMC 0350 was later changed to "Oversight of Operating Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns."

The three major aspects of the IMC 0350 process are: (1) the criteria for placing a plant into the process, (2) the scope of issues for the IMC 0350 required restart panel, and (3) the criteria for removing a plant from this process and placing it back into the routine ROP. The thresholds for placing a plant into the IMC 0350 process have been risk-informed and made more objective by using the assessment program Action Matrix. Consideration is given for placing a plant in the IMC 0350 process when a licensee's performance is determined to be in the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix, and the plant is expected to be shutdown for at least three months.

The second area of the IMC 0350 process is the criteria used to determine what issues need to resolved before restarting a plant. The scope of issues to be considered prior to restart has been risk informed by using the SDP. The issue(s) that have to be resolved before a plant restarts, and would be within the restart panel's scope, should have risk significance (i.e., White, Yellow, or Red), but the issue(s) would not be limited to any specific performance area.

The third area of the IMC 0350 process is the criteria for returning a plant to the routine ROP. This criteria also has been risk-informed by using the Action Matrix. The approval for exiting the process and returning a plant to the routine ROP is based on the licensee satisfactorily resolving all performance issues with low to moderate or greater risk significance (i.e., White, Yellow, or Red), and has operated the plant for approximately four calendar quarters while accumulating PI data needed for the routine assessment process.

After a year of implementation under the ROP, and from the experience gained with one licensee that was under the IMC 0350 process, the staff revised the process to clarify the conditions for entering the process, as well as clarifying the responsibilities of designated positions, while encouraging the continued collection of PIs, if they remain valid. In December 2003, IMC 0350 was revised to provide a comprehensive correlation between aspects of the ROP and the IMC 0350 process, to provide an enhanced structure to the inspection approach

for IMC 0350 plants, and to incorporate other lessons learned and clarifications. Additional detail on the scope and basis for the IMC 0350 process can be found in Figure 48.

## 7 THRESHOLD FOR DOCUMENTING FINDINGS AND INSIGHTS

The ROP uses PIs and inspection findings evaluated for risk in determining a plant's performance in meeting the objectives of the seven cornerstones, and in determining agency actions. Therefore, the format for inspection reports for the baseline inspection program was developed to document only those issues that meet a minimum threshold for safety importance. This change removed from the reports much of the discussion regarding inspector observations of licensee activities (both positive and negative), minor findings and minor violations identified by the inspector, and licensee identified findings of very low significance that would not be used in objectively assessing performance.

Stakeholder feedback during the pilot program indicated that many inspectors and regional managers were uncomfortable with removing from inspection reports these "insights" into licensees' performance. The inspectors and regional managers feel they need these observations (i.e., issues that may have very little or no risk significance individually) to better assess cross-cutting areas, such as problem identification and resolution and human performance. Some licensees also expressed their concern with no longer having these insights and observations from NRC inspectors. Therefore, the guidance for inspection reports was changed to allow inspectors to document observations in conjunction with and to support a finding.

The assessment program was developed to use objective and repeatable indications of problems to assist the NRC in assessing licensee performance and to determine the appropriate level of NRC's response. Positive findings, which generally are subjective and usually have no measurable basis in regulation or safety, were not included in the assessment process. Therefore, it was decided that they should not be documented in inspection reports. Stakeholder comment was solicited during the development and pilot program for the ROP to determine whether positive inspection findings should be captured and incorporated into the oversight process.

The consensus was that the NRC does not have objective criteria for evaluating positive findings. Therefore, because the assessment process does not explicitly incorporate positive findings, they should not be documented in inspection reports. However, positive aspects of licensee operations will be reflected in those items for which the SDP credits mitigation capabilities, and those positive aspects will be recorded in inspection reports as assumptions used in characterizing inspection findings.

Although not documented and used in the assessment process, inspection observations (both positive and negative) and minor violations should be verbally communicated to the licensee in routine interactions by the inspectors during the inspection. It was also considered to be more appropriate for licensee's to communicate positive aspects of their operations to the public.

## 8 OTHER INSPECTION PROGRAM ASPECTS CONSIDERED BUT NOT INCLUDED

While developing the baseline inspection program, several additional inspectable areas were considered, but not included in the program. These other inspectable areas were not included for several reasons, such as adequate coverage of the area by an existing PI, adequate coverage by another inspectable area, or having low safety significance relative to the other

inspectable areas in the program. Some of these additional inspectable areas that were considered, and the basis for not including them in the baseline inspection program, are listed in Table 2 of this Attachment. In addition to inspectable areas, Table 2 also includes other inspection program attributes that were considered but not included.

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Adverse Weather Protection | |
| Cornerstone(s): Initiating Events and Mitigating Systems | Inspection Procedure: IP 71111.01 |
| Scope: Inspection activities in this area focus on evaluating the licensee's readiness for protecting mitigating systems and components from external factors such as tornado, hurricane, high winds, high temperatures, cold weather and other adverse weather related conditions. This inspection focus ensures that risk significant systems and components will perform within the design assumptions for adverse weather. | |
| Basis: Inspection of this item supports the Initiating Events and Mitigating Systems cornerstones by ensuring that the licensee takes steps to reduce the effects of weather-related initiating events and the impact of adverse weather on key portions of mitigating systems. Weather conditions leading to loss of offsite power, freezing temperatures, high temperatures, and high winds dominate external risk.<br><br>The inspection activities are intended to verify that the licensee has taken the necessary steps to demonstrate that the reliability, availability and functional capability of SSCs and associated components are maintained during adverse weather conditions. For example, operating experience indicates that cold weather conditions continue to cause intake structure icing, process and instrument line freezing, emergency diesel generator oil viscosity problems, essential chiller problems, and electrical problems leading to loss of power. High winds, tornado, and hurricane could affect the availability of offsite power.<br><br>Frozen equipment can lead to a common cause/mode loss of multiple trains and loss of equipment in redundant systems without any indication of a problem until called upon to function, which would have a significant impact on plant risk. In addition, high temperature conditions can place plant equipment and systems in an unanalyzed condition, which could also have a significant impact on risk. | |
| Performance Indicators: There are no performance indicators that have been established that can provide information related to the adequacy of licensee's readiness for seasonal susceptibilities and for any impending adverse weather conditions. | |
| Significant Changes in Scope or Basis: December 2001 - Revised procedure to provide additional clarification to the inspection requirements and guidance for evaluating licensee's readiness for seasonal susceptibilities and impending weather conditions.<br><br>January 2002 - Revised to provide detailed inspection requirements and guidance for evaluating licensee's readiness for seasonal susceptibilities and impending weather conditions. In addition, the inspection resources estimate is revised to provide a band for more inspection flexibility.<br><br>January 2008 – Procedure was expanded to include a review of a site's readiness to cope with external flooding prior to the onset of adverse weather that poses a risk of flooding. Prior to this change, review of external flooding readiness was located in IP 71111.06. | |

| Basis Summary Sheet |
| --- |
| Inspectable Area: Adverse Weather Protection |
| January 2016 - Revised to incorporate Fukushima Lessons Learned and Fukushima flooding inspection insights as well as an inspection requirement to verify licensees can demonstrate that diesel fuel oil cloud point specifications are acceptable for operability of diesel generator systems with above ground fuel storage tanks during extreme cold weather conditions. |

Figure 1 Adverse Weather Protection Basis Summary Sheet (IP 71111.01)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.02 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 2 Reserved Basis Summary Sheet (IP 71111.02)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.03 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 3 Reserved Basis Summary Sheet (IP 71111.03)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Equipment Alignment | |
| Cornerstone(s): Initiating Events, Mitigating Systems, and Barrier Integrity | Inspection Procedure: IP71111.04 |
| Scope: To verify equipment alignment and identify any discrepancies that impact the function(s) of the system and, therefore, potentially increase risk. This includes conducting approximately three partial walkdown inspections each calendar quarter to verify the operability of a redundant or backup system/train or a remaining operable system/train with the highest risk significance for the current plant configuration (considering out-of-service, inoperable, or degraded equipment); or a risk-significant system/train that was recently realigned following an extended system outage, maintenance, modification, or testing; or a risk-significant single-train system. In addition, inspectors will perform one complete walkdown every 6 months to support only the Mitigating Systems cornerstone. This inspection activity will be performed during both shutdown and operating conditions. | |
| Basis: Inspection of this area supports the Initiating Events, Mitigating Systems and Barrier Integrity cornerstones.<br><br>The inspection activities are intended to verify that the licensee has an effective process for maintaining system configuration control, which ensures that the functional capability of the plant system is maintained. Systems or components that are not properly aligned can lead to the initiation of an event and can impact the availability and functional capability of plant equipment, thereby significantly increasing the overall risk to the plant. Inspection activities would normally be performed following emergent work activities, planned removal of risk-significant systems for online maintenance, and during outage related activities. | |
| Performance Indicators: Unavailability and safety system functional failure performance indicators have been identified. Due to the monitoring of a limited number of systems, this inspection supplements those PIs. Also, there is no similar PI for equipment lineup during shutdown conditions, requiring this baseline inspection. | |
| Significant Changes in Scope or Basis:<br><br>None | |

Figure 4 Equipment Alignment Basis Summary Sheet (IP 71111.04)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Fire Protection | |
| Cornerstone(s): Initiating Events and Mitigating Systems | Inspection Procedure: IP 71111.05 |

Scope: The inspection is conducted in three phases. Phase one consists of the routine inspection conducted by the resident inspectors and it incorporates a quarterly assessment of conditions related to ignition sources, control of combustible materials, and fire protection systems and equipment. Phase two, also conducted by the resident inspectors includes the assessment of fire brigade staffing, training and performance. Phase three is the triennial team inspection to conduct a design based risk-informed inspection that includes the defense-in-depth elements of the fire protection installed to mitigate the consequences of a fire. The team assesses the capability of equipment necessary for plant shutdown following a fire.

Basis: Inspection of this item supports the Initiating Events and Mitigating Systems cornerstones.

The inspection reviews licensee controls designed to minimize the probability of a fire and the availability and reliability of equipment necessary to mitigate the effects of a fire.

Proper implementation of the fire protection program is important to provide defense-in-depth against fires by maximizing prevention, detection, suppression, and mitigation capabilities for fires. An effective program reduces the risk of a fire being an initiating event. Also, in the event of a fire, reliable detection, suppression and mitigation capabilities ensure the plant can be safely shut down. Plant specific evaluations have shown internal fires to be high contributors to risk at some plants due to the potential for damaging redundant systems and multiple control circuits and due to the adverse effect on operator mitigation strategies.

Performance Indicators: There are no performance indicators that assess performance in the area of fire protection.

Significant Changes in Scope or Basis:

March 2001 - The scope of the procedure was reduced while criteria for review of fire-induced circuit failures of associated circuits is the subject of a voluntary industry initiative. Per this temporary revision, the inspector is not required to address associated circuits issues as a direct line of inquiry nor develop associated circuits inspection findings (with certain exceptions contained in Section 02.03 of the procedure). However, in certain instances associated circuits issues may arise unavoidably and indirectly during the inspector’s review of safe shutdown system selection, redundant train separation, and the provision of independent alternative shutdown capabilities ("byproduct" associated circuits issues). These byproduct associated circuits issues shall be documented as unresolved items awaiting generic resolution of the related associated circuits issues.

March 2003 - Revised to provide inspection guidance to evaluate licensee manual actions which have been incorporated into the procedure as Enclosure 2.

September 2004 - separated the Triennial Fire Protection Inspection Procedure (71111.05T) from the Quarterly and Annual Inspection Procedure (71111.05QA). There are no substantial changes to the Quarterly and Annual inspection procedure.

| Basis Summary Sheet |
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| Inspectable Area: Fire Protection |
| January 2005 - Reinstated the inspection of circuits, with enforcement discretion for escalated findings extended through 2005.<br><br>June 2005 - Reissued 71111.05QA inspection procedure with new guidance to assess fire brigade performance. |

Figure 5 Fire Protection Basis Summary Sheet (IP 71111.05)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Flood Protection Measures | |
| Cornerstone(s): Initiating Events and Mitigating Systems | Inspection Procedure: IP 71111.06 |
| Scope: Inspection activities in this area focus on licensee's readiness to protect the plant from potential internal and external flooding. These inspection activities would include walkdown verification of key plant areas to verify flood protection features, review of procedures including verification of key operator actions credited for coping with flood, and evaluation of compensatory measures during impending conditions of flooding or heavy rains. The inspection will also focus on verifying that the licensee's flooding mitigation plans and equipment are consistent with the licensee's design requirements and the risk analysis assumptions, and equipment is routinely tested and remains fully capable to perform the intended functions. | |
| Basis: This activity would be an input to the Initiating Events and Mitigating Systems cornerstones.<br><br>Verification of the licensee's implementation of the flood control program would be performed to insure that the facility is capable of withstanding potential internal and external flooding. Flooding would have a significant adverse affect on the functional capability of safety and risk related equipment needed to maintain the plant in a safe shutdown condition.<br><br>Flooding due to external and internal causes has been shown to be a significant contributor to risk at some facilities. In addition, flooding has the potential to make multiple trains of equipment and support equipment inoperable which would result in a significant increase in risk to the plant. Flooding also has a significant consequence of preventing or limiting operator mitigation and recovery actions. | |
| Performance Indicators: There are no performance indicators that have been established that can provide results related to the adequacy of the licensee's program for mitigating the consequences for flooding. Due to the rare but possibly risk significant nature of flooding events, no performance indicator was judged to be suitable for monitoring licensee performance in this area. | |
| Significant Changes in Scope or Basis:<br><br>None | |

Figure 6 Flood Protection Measures Basis Summary Sheet (IP 71111.06)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Heat Sink Performance | |
| Cornerstone(s): Initiating Events and Mitigating Systems | Inspection Procedure: IP 71111.07 |
| Scope: To verify that any potential heat exchanger deficiencies which could mask degraded performance or common cause heat sink performance problems that have the potential to increase risk are identified. Applies to all heat exchangers connected to safety related service water systems.<br><br>To verify that the licensee has adequately identified and resolved heat exchanger/sink performance problems that could result in initiating events or affect multiple heat exchangers in mitigating systems and thereby increase risk. | |
| Basis: Inspection in this area supports the Initiating Events and Mitigating Systems cornerstones by ensuring initiating events are not caused by a loss of heat sink and that mitigating systems heat removal capabilities are not degraded.<br><br>Heat exchangers and heat sinks are required to remove decay heat, and provide cooling water for operating equipment. Degradation in performance can result in failure to meet system success criteria, and lead to increased risk primarily due to common cause failures. This inspectable area verifies aspects of the associated cornerstones for which there are no indicators to measure performance.<br><br>The inspection focuses on events that could result in the simultaneous loss of both the normal and ultimate heat sinks due to events such as ice buildup, grass intrusion or blockage of pipes and components by other foreign materials, and verifying the heat transfer capabilities of risk significant heat exchangers by observing performance testing, reviewing the results of those same tests, inspection/cleaning, or by monitoring licensee's bio-fouling controls.<br><br>Also, industry experience has shown that many plants have experienced significant problems with repeated loss of heat sink and degraded performance of heat exchangers due to problems that include corrosion, silting and fouling. Since the subject heat exchangers do not normally operate at design heat loads, it is important for the licensee to routinely monitor the performance of the heat exchangers to ensure that the heat exchangers are capable of meeting their design requirements. | |
| Performance Indicators: None of the established PIs cover this area. | |
| Significant Changes in Scope or Basis:<br>April 2000 - The inspection scope and basis were revised to address the following: (1) The procedure not only addresses heat sinks but also heat exchangers and the different bases for measuring their respective performances; (2) Heat exchanger heat transfer capabilities can be measured not only by observing performance tests, but by reviewing those same tests, inspection/cleaning, or by monitoring licensee's bio-fouling controls; (3) Methods of measuring the performance of heat sinks and their subcomponents like piping, valves, and pumps within the cooling medium servicing the ultimate heat sink were included in the procedure; and (4) Methods of measuring the performance of heat exchangers based on their design basis and design data sheets were included in procedure for all risk significant heat exchangers including those in closed-cooling systems. | |

Figure 7 Heat Sink Performance Basis Summary Sheet (IP 71111.07)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Inservice Inspection Activities | |
| Cornerstone(s): Initiating Events and Barrier Integrity | Inspection Procedure: IP 71111.08 |
| Scope: Inspection activities in the area would focus on the effectiveness of the licensee's program for inservice inspection (ISI), repair, replacement of reactor coolant system (RCS) pressure retaining components, and monitoring of licensee's program for verifying the integrity of steam generator (SG) tubes. Inspection activities would include a review of the results of the SG tube inspections for insitu pressure testing, identification of new degradation mechanisms for SG tubes, confirmation that the licensee has taken appropriate actions for SG tube leakage, repairs, and any foreign material identified in them, selected review of risk significant non-code repairs, and a review or observation of the reactor vessel ISI examinations. | |
| Basis: Inspection activities in this area primarily support the Barrier Integrity cornerstone. Activities also support the Initiating Events cornerstone because ISI activities can detect precursors to RCS boundary failures.<br><br>The inspection activities are intended to ensure that the licensee has an effective program for monitoring degradation of reactor coolant system boundary, including steam generator tubes, control of non-code repairs to ASME components, and performing the required periodic ISI examinations.<br><br>Degradation of the RCS, SG tubes, or safety related support systems would result in a significant increase in risk. Degraded piping or tubes would increase the risk impact due to initiation of events. In addition, it would result in mitigating systems not being capable of performing their intended design functions. Based on these considerations, inspection activities are necessary to ensure that the licensee has an effective ISI program to ensure that risk significant degradation of the RCS boundary is identified and is promptly and appropriately corrected. | |
| Performance Indicators: There are no performance indicators that have been established that can provide results related to the adequacy of the licensee's program for ensuring system integrity in accordance with ASME requirements. | |
| Significant Changes in Scope or Basis:<br>October 2001 - The procedure was revised to emphasize the inspector review of the licensee's total program for ensuring the integrity of SG tubes so as to provide clear indication of impending problems before they could actually develop. The inspector no longer verifies the results of eddy current testing just to ensure that scope and expansion criteria meet technical specifications. Significant aspects of insitu pressure testing are reviewed along with whether licensee has identified new degradation mechanisms for SG tubes. The inspector also confirms that the licensee has appropriately addressed repairs, leakage, and foreign material, and refers any serious questions on eddy current testing to NRC staff with the requisite experience.<br><br>January 2004 - The procedure has been revised to add periodic inspection requirements and guidance for PWR vessel head penetrations and boric acid corrosion control, and to make other minor clarifications. In addition, the resource estimate for PWR inspection has been increased. | |

Figure 8 Inservice Inspection Activities Basis Summary Sheet (IP 71111.08)

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|---|---|
| Basis Summary Sheet | |
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.09 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 9 Reserved Basis Summary Sheet (IP 71111.09)

| | |
|---|---|
| Basis Summary Sheet | |
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.10 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 10 Reserved Basis Summary Sheet (IP 71111.10)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Licensed Operator Requalification Program | |
| Cornerstone(s): Mitigating Systems, Barrier Integrity, and Emergency Preparedness | Inspection Procedure: IP 71111.11 |
| Scope: Inspection activities in this area would focus on the effectiveness of the licensee's program for conducting operator requalification training. Inspection activities would include a review of requalification examinations, the remedial training program, the training feedback system, and programs for ensuring medical fitness of licensed operators. In addition, inspection activities also verify that the facility's operating history has been factored into the requalification program and verifies conformance with operator license conditions. | |
| Basis: Inspection of this area supports the Mitigating Systems, Barrier Integrity and Emergency Preparedness cornerstones because it can assess operator performance adequacy in responding to events.<br><br>This inspection evaluates operator performance in mitigating the consequences of events. Poor operator performance results in increased risk due to its impact on the human factors terms, assumed operator recovery rates and personnel induced common cause error rates assumed in the facility Individual Plant Evaluations (IPE). Human performance errors and failure to recover from accident events are the most risk important events at a facility.<br><br>The inspection interval was established at a biennial frequency to allow for more comprehensive inspections of licensee requalification program cycles that approached 24 months in duration. | |
| Performance Indicators: There are no performance indicators that have been established that can provide results related to the adequacy of the licensee's licensed operator requalification program. | |
| Significant Changes in Scope or Basis:<br><br>March 2001 - Added additional guidance to allow the conduct of this inspection in separate parts during the biennial inspection cycle. This was done to provide additional scheduling flexibility to allow the regions to observe portions of the licensed operator requalification program that occur at different times, such as the annual written exams.<br><br>August 2002 - Revised to reflect the amended 10 CFR Part 55, "Operators' Licenses," regarding operator license eligibility and the use of simulation facilities in operator licensing (66 FRN 52657, dated October 17, 2001). This revision provides specific guidance to inspector when assessing conformance with simulator requirements specified in 10 CFR 55.46.<br><br>December 2003 - Revised to include an additional section that inspects excessive test item repetition among comprehensive requalification exams that are taken by crews undergoing the same training program cycle.<br>Excessive item repetition adversely affects validity of the exam. | |

Figure 11 Licensed Operator Requalification Program Basis Summary Sheet (IP 71111.11)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Maintenance Effectiveness | |
| Cornerstone(s): Initiating Events, Mitigating Systems, and Barrier Integrity | Inspection Procedure: IP 71111.12 |

Scope: To independently verify the licensee's appropriate handling of structures, systems, or components (SSCs) performance or condition problems in terms of:

- Appropriate work practices;
- Identifying common-cause failures;
- Scoping in accordance with 10 CFR 50.65(b);
- Characterizing reliability issues (performance);
- Charging unavailability (performance);
- Trending key parameters (condition monitoring)
- 10 CFR 50.65 (a)(1) or (a)(2) classification and reclassification;
- Appropriateness of performance criteria for SSCs/functions classified (a)(2) or appropriateness of goals and corrective actions for SSCs/functions classified (a)(1)

The scope of the inspection activities would include performance issues associated with risk significant SSCs covered under the maintenance rule. This inspection will also assess the effectiveness of the licensee's periodic evaluation and resulting adjustments among those performed pursuant to 10 CFR 50.65(a)(3) every two years.

Basis: Inspection of this item supports the Initiating Events, Mitigating Systems and Barrier Integrity cornerstones. Reliability and availability of maintenance rule (MR) SSCs as monitored or demonstrated under the MR directly affect those reactor safety cornerstones and are dependent upon maintenance effectiveness (including work practices and common-cause problems).

Proper monitoring and implementation of the MR attributes should ensure that there is a proper balance that optimizes availability and reliability when removing equipment from service for preventive maintenance. High availability and reliability result in a high probability that accident mitigation systems will perform successfully when needed and that Barrier Integrity will remain effective in preventing the release of radioactivity. Proper work practices, corrective actions, and reducing potential common cause failures will also ensure that the SSCs are capable of fulfilling their intended safety functions.

Performance Indicators: This inspection area supplements the scram, transient, safety system unavailability, and safety system functional failure performance indicators. While these indicators provide some insights of equipment performance in a limited number of safety systems, they do not provide adequate information to monitor the equipment performance of systems covered under the scope of the maintenance rule. In addition, inspection activities in this area would provide an assessment of equipment reliability where a performance indicator does not exist.

Significant Changes in Scope or Basis:

December 2001 - This IP was revised extensively to focus the inspection activities on reviewing maintenance effectiveness issues associated with availability, reliability, common cause failures, and work practices of risk significant SSCs.

| Basis Summary Sheet |
| --- |
| Inspectable Area: Maintenance Effectiveness |
| July 2002 - Revised to clarify inspection objectives and to improve effectiveness of this procedure based on feedback and lessons learned from implementation. This revision provides greater focus on reviewing licensee's effectiveness at performing routine maintenance. The revised procedure also focuses on review of equipment performance issues associated with availability and reliability, preferably on high-risk significant systems, maintenance work practices, and common cause issues. Sample size and inspection resource requirements were revised based on experience gained from four verification and validation visits at one site in each region. |

Figure 12 Maintenance Effectiveness Basis Summary Sheet (IP 71111.12)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Maintenance Rule Risk Assessments and Emergent Work Control | |
| Cornerstone(s): Initiating Events, Mitigating Systems and Barrier Integrity | Inspection Procedure: IP 71111.13 |
| Scope: Inspection activities in this area would focus on the effectiveness of the licensee's configuration controls during shutdown and power operations. Paragraph (a)(4) of 10 CFR 50.65, the Maintenance Rule (MR), requires licensees to assess and manage plant risk related to maintenance activities during all modes of plant operation. The inspector would verify that before performing maintenance activities (including but not limited to surveillances, post-maintenance testing, and corrective and preventive maintenance), the licensees assess and manage the increase in risk that may result from configuration change related to the proposed maintenance activities. The inspectors also verify that the licensees effectively plan and control emergent work activities to minimize the probability of initiating events, maintain the functional capability of mitigating systems and maintain barrier integrity. | |
| Basis: This inspection item supports the Mitigating Systems, Initiating Events and Barrier Integrity cornerstones.<br><br>Maintenance is the primary means of mitigating and managing the effects of component degradation and failures. Operating experience shows that the lack of maintenance (component deficiencies not corrected) or improperly performed maintenance (maintenance activities not well controlled) can greatly contribute to the risk for event initiation, and may cause SSCs to not function properly if called upon to mitigate the consequence of an event. Operating experience also shows that for risk significant events identified through the Accident Sequence Precursor (ASP) program, work control and failure to maintain equipment represent the majority of causes. Loss of configuration control of risk-significant safety equipment can initiate a reactor transient and simultaneously compromise mitigation capability. During shutdowns, when equipment is out of service for maintenance or testing or when off-normal lineups or infrequent tests and evolutions are being conducted, configuration control problems are more likely to result in initiating events or loss of barrier integrity. | |
| Performance Indicators: The safety system unavailability performance indicators provide only some information on the adequacy of configuration control of selected systems. Inspections will monitor plant configuration changes to ensure that the risk is assessed and managed properly to minimize the probability of initiating events, maintain the functional capability of mitigating systems and maintain barrier integrity. This inspection supplements the PI. | |
| Significant Changes in Scope or Basis:<br><br>April 2000 - The emergent work inspection requirements and guidance were added to the procedure since this IP covered inspection of configuration control issues.<br><br>November 2000 - Revised to clarify inspection objectives and requirements and to provide detailed guidance to support the 10 CFR 50.65(a)(4) rule change.<br><br>January 2002 - Revised to provide bands for inspection resource estimates and sample sizes and guidance for inspection procedure status. | |

Figure 13 Maintenance Rule Risk Assessments and Emergent Work Control Basis Summary Sheet (IP 71111.13)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.14 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 14 Reserved Basis Summary Sheet (IP 71111.14)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Operability Evaluations and Functionality Assessments | |
| Cornerstone(s): Mitigating Systems and Barrier Integrity | Inspection Procedure: IP 71111.15 |
| Scope: Inspection activities in this area would focus on the evaluation of degraded and non-conforming conditions affecting plant systems, structures and components (SSCs). Inspection activities would be limited to a review of those potentially risk significant degraded and non-conforming conditions affecting SSCs that are considered to be either operable or functional based on written evaluations. Initial reviews of the operability or functionality evaluations should be performed following formal completion of the evaluations by the licensee. The inspection would ensure that the evaluations include an adequate technical justification to support the operability or functionality evaluation and would verify the implementation of any compensatory measures. | |
| Basis: Inspection of this item supports the Mitigating Systems and Barrier Integrity cornerstones by ensuring risk-significant SSCs can perform their specified safety or current licensing basis (CLB) function. Improperly evaluated degraded and/or non-conforming conditions may result in continued operation with an SSC that is not capable of performing its specified safety or CLB function.<br><br>The inspection activities are intended to verify that the licensee has taken the necessary steps to demonstrate that the reliability, availability and functional capability of the SSCs and associated components are maintained although the SSCs are degraded and/or non-conforming in some way.<br><br>As a result of the size and complexity of a nuclear power plant, degraded and non-conforming conditions are frequently identified at all plants. Risk-significant SSCs are often affected and the degraded or non-conforming condition cannot always be corrected immediately. An improperly evaluated degraded and/or non-conforming condition may result in continued operation with a SSC that is not capable of performing its specified safety or CLB function which would result in operation of the plant outside of its design and/or license bases. The potential effects on safe operation could include the loss of redundancy within a safety system, the loss of specified safety or CLB function or a reduction in the safety margin assumed in the plant design and analyses. | |
| Performance Indicators: There are no performance indicators that provide effective assessment of the quality of operability evaluations. | |
| Significant Changes in Scope Basis:<br>January 2002 - Revised to provide minor clarifications to inspection requirements and additional inspection guidance concerning operability evaluations. In addition, inspection resource estimates and inspection level of effort are revised to provide a band for more inspection flexibility.<br><br>February 2004 - Revised to include deferred modifications to the inspection sampling list.<br><br>April 2011 - Revised to allow for the oversight of functionality assessments associated with risk-significant SSCs, regardless of the potential impact to technical specification (TS) SSC operability. | |

| Basis Summary Sheet |
| --- |
| Inspectable Area: Operability Evaluations and Functionality Assessments |
| December 2014 – Revised to relocate operator workaround (OWA) sample requirements from IP 71152 per 2013 ROP Enhancement effort (ML14017A340 & ML14017A391).<br><br>December 2016 - Revisions are made to address use of mandatory and discretionary language concerns and recommendations found in OIG-16-A-12 (ML16097A515). In addition, the requirement to inspect at least one sample associated with OWAs was deleted. However, as discussed in guidance section of the IP, review of manual compensatory measures / OWAs may still be afforded if a sample opportunity exists (i.e. flexibility offered in sample selection). |

Figure 15 Operability Evaluations and Functionality Assessments Basis Summary Sheet (IP 71111.15)

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|---|---|
| Basis Summary Sheet | |
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.16 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 16 Reserved Basis Summary Sheet (IP 71111.16)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Evaluations of Changes, Tests, or Experiments | |
| Cornerstone(s): Initiating Events, Mitigating Systems, and Barrier Integrity | Inspection Procedure: IP 71111.17T |
| Scope: This inspection monitors the effectiveness of the licensee's implementation of changes to facility structures, systems, and components (SSCs), risk significant normal and emergency operating procedures, test programs, and the updated final safety analysis report (UFSAR) in accordance with the requirements of 10 CFR 50.59. This inspection provides assurance that required license amendments have been obtained. It verifies aspects of Initiating Events, Mitigating Systems and Barrier Integrity cornerstones for which there are no indicators to measure performance. | |
| Basis: Inspection of this area supports the Mitigating Systems, Barrier Integrity, and Initiating Events cornerstones.<br><br>Inspection of this item verifies that changes to facility and procedures as described in the UFSAR, and changes to tests and experiments not described in the UFSAR are in accordance with the requirements of 10 CFR 50.59. This would provide assurance that the changes in facility, procedures, or test/experiments has not reduced the safety margins of the SSCs or for operation of the plant. | |
| Performance Indicators: No performance indicators have been established that can provide results related to the adequacy of the licensee's program for making changes to the facility. | |
| Significant Changes in Scope or Basis:<br><br>January 2008 - IP 71111.17, "Permanent Plant Modifications," was revised to IP 71111.17T, "Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications." This new revision combined the previous IP 71111.02, "Evaluations of Changes, Tests, or Experiments," and the biennial portion of IP 71111.17, "Permanent Plant Modifications" as a triennial inspection. The changes are associated with a 2007 ROP realignment effort as indicated in SECY-08-0046 (ML073020593).<br><br>December 2016 - Revisions were made to: 1) address use of mandatory and discretionary language concerns and recommendations found in OIG-16-A-12 (ML16097A515), and 2) relocate inspection of permanent plant modifications to a revised IP 71111.21M, "Design Bases Assurance Inspection (Teams)." As a result, IP 71111.17T was retitled "Evaluations of Changes, Tests, and Experiments." | |

Figure 17 Evaluations of Changes, Tests, or Experiments Basis Summary Sheet (IP 71111.17T)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Plant Modifications | |
| Cornerstone(s): Initiating Events, Mitigating Systems, and Barrier Integrity | Inspection Procedure: IP 71111.18 |
| Scope: Inspection activities in this area include the review of design, installation, configuration control, and post-modification testing for the potentially risk significant permanent modifications of the systems, structures, and components (SSCs) covered by the maintenance rule. Inspection activities would also include an in-depth review of changes to the initial licensed design, design basis documents, test procedures and normal and emergency operating procedures.<br><br>Inspection activities in this area includes a review of design, installation, configuration control, and post modification testing for potentially risk significant temporary modifications of the systems, structures, and components (SSCs) covered by the maintenance rule. | |
| Basis: Modifications to risk-significant structures, systems, and components (SSCs) can adversely affect their availability, reliability, or functional capability. Modifications to one system may also affect the design bases and functioning of interfacing systems. Similar modifications to several systems could introduce potential for common cause failures that affect plant risk. A temporary modification may result in a departure from the design basis and system success criteria. Modifications performed during increased risk configurations could place the plant in an unsafe condition.<br><br>Inspection of this area supports the design and design control attributes of the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones. | |
| Performance Indicators: No performance indicators have been established that can provide results related to the adequacy of plant modifications. | |
| Significant Changes in Scope or Basis:<br><br>January 2008 - IP 71111.18, “Plant Modifications,” was created. This new IP combined previous aspects of IP 71111.17, “Permanent Plant Modifications” and IP 71111.23, “Temporary Plant Modifications.” The changes are associated with a 2007 ROP realignment effort as indicated in SECY-08-0046 (ML073020593).<br><br>November 2016 – IP revised to provide oversight of Severe Accident Management Guidelines (SAMGs). Changes directed by SRM SECY-15-0065 (ML15239A767). | |

Figure 18 Plant Modifications Basis Summary Sheet (IP 71111.18)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Post-Maintenance Testing | |
| Cornerstone(s): Mitigating Systems and Barrier Integrity | Inspection Procedure: IP 71111.19 |
| Scope: Inspection activities would focus on verification that the post maintenance test procedures and test activities were adequate to verify system operability and functional capability for the maintenance that was performed. The inspection would focus on significant maintenance involving high risk significant systems or components, in areas that have the potential to cause common mode/cause failures, where repetitive failures indicate programmatic problems, or on maintenance activities that have the potential to significantly impact risk. | |
| Basis: Inspection of this item supports the Mitigating Systems and Barrier Integrity cornerstones.<br><br>Post maintenance testing provides the final check that a system and /or component has been returned to its required design configuration and will perform its design function(s) following completion of maintenance activities. Inadequate maintenance activities that are not detected prior to returning the equipment to service can result in a significant increase in unidentified risk for the subject system and in common mode/cause failures and potential for loss of function on redundant trains and identical components in other systems. | |
| Performance Indicators: This inspection activity will supplement PIs (scram, transient, and safety system unavailability and safety system functional failure). These PIs do not directly measure the adequacy of the post-maintenance test procedures but indirectly confirm the quality of maintenance and test procedures. | |
| Significant Changes in Scope or Basis:<br><br>None | |

Figure 19 Post Maintenance Testing Basis Summary Sheet (IP 71111.19)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Refueling and Other Outage Activities | |
| Cornerstone(s): Initiating Events, Mitigating Systems, and Barrier Integrity | Inspection Procedure: IP 71111.20 |
| Scope: Inspections focus on the licensee's shutdown risk management program and outage related activities having the potential to impact plant risk. Areas include clearance activities, reactor coolant system instrumentation, electrical power, decay heat removal monitoring, spent fuel pool cooling system operation, inventory control, reactivity control, containment closure, reduced inventory/mid-loop operations, refueling activities, and heatup/startup activities. The inspection also focuses on inspection of SSCs in containment. The inspection applies to planned outages (such as refueling outages) as well as forced outages. | |
| Basis: Shutdown risk can be high for deficiencies that occur when vital SSCs are not available, such as during the fuel handling period of a refueling outage and off-normal plant configurations in other outage periods. Times of reduced inventory are the most critical. During outages, barriers to prevent radiological releases may be degraded. Inspection activities assess licensee steps to preclude events, maintain defense in depth, and ensure appropriate SSCs are available. | |
| Performance Indicators: There are no performance indicators for licensee performance during refueling and other outages. | |
| Significant Changes in Scope or Basis:<br><br>January 2002 - Revised to integrate with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," regarding risk insights and how to evaluate inspection findings. It also addresses refueling controls, improper sequencing of control rods or fuel assemblies, reactivity control, and methods to ensure fuel assembles are loaded in correct positions.<br><br>November 2003 - Revised to address licensee procedures for foreign material exclusion, instruments tracking plant condition changes, training procedures for BWR alternate decay heat removal. It also cross references IMC<br>2515, Appendix D, "Plant Status" regarding plant status tours of areas accessible only<br><br>May 2004 - revised to add guidance for containment inspections, when possible, and to add a completion status section. | |

Figure 20 Refueling and Other Outage Activities Basis Summary Sheet (IP 71111.20)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Safety System Design and Performance Capability | |
| Cornerstone(s): Mitigating Systems | Inspection Procedure: IP 71111.21 |
| Scope: Inspection includes review of design bases, updated final safety analysis report (UFSAR), supporting calculations, as-built conditions, modifications, testing, and normal and emergency operations of risk-significant systems and interfaces with support systems. This would be an in-depth review of a selected risk significant system and support systems with an emphasis on changes to the design bases and normal and emergency plant procedures. The selection of the system(s) should be based on systems with high probabilistic risk analysis (PRA) rankings; with design attributes not fully demonstrated through testing; with significant modifications, changes to design bases, and operating procedure changes; that have not received recent NRC review; which have multiple maintenance rule functions or which support multiple systems; which complement each other (e.g., for a PWR, AFW and pressurizer PORVs; for a BWR, HPCI and ADS) like from a dominant accident sequence since the systems would be complimentary in regard to one type of accident; and which are contained within the NRC risk-informed notebook for a specific plant for a particular initiating event. | |
| Basis: Inspection of safety system design and performance verifies the initial design and subsequent modifications and provides monitoring of the capability of the selected system to perform its design basis functions. The inspection should focus on the design and functional capability of components that are not validated by in-plant testing. Also, seismic and environmental qualifications of the SSCs should be verified. The PRA assumptions and models are based on the ability of the as-built safety system to perform its intended safety function successfully. If the design bases of the system had not been correctly implemented in the installed system, the operation and test procedures, and the supporting analyses and calculations, the system cannot be relied upon to meet its design bases and performance requirements. The design interfaces with support systems, such as cooling systems, ventilation systems, and instrument air system, should also be reviewed.<br><br>The baseline inspection should focus on: (1) maintaining design bases (2) consistency with defense-in-depth philosophy, and (3) maintaining sufficient safety margins. | |
| Performance Indicators: There are no performance indicators that have been established that can provide results related to correct implementation of the design bases in the as-built system and the associated plant documents. | |
| Significant Changes in Scope and Basis:<br><br>None | |

Figure 21 Safety System Design and Performance Capability Basis Summary Sheet (IP 71111.21)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Surveillance Testing | |
| Cornerstone(s): Mitigating Systems and Barrier Integrity | Inspection Procedure: IP 71111.22 |
| Scope: This inspection will focus on verifying that surveillance testing (including inservice testing) of risk-significant structures, systems, and components (SSCs) are capable of performing their intended safety functions and assessing their operational readiness. The inspector will review surveillance test results for adequacy in meeting the requirements, observe ongoing testing to evaluate human performance, and ensure that appropriate test acceptance criteria is in agreement with design requirements. | |
| Basis: Inspection of this area ensures that safety systems are capable of performing their safety function and support the Mitigating Systems and Barrier Integrity Cornerstones. The failure to identify and resolve performance degradation of structures, systems and components, could result in long periods of unknown equipment unavailability. This inspection procedure verifies aspects of the associated cornerstones not measured by performance indicators.<br><br>Surveillance testing including inservice testing of pumps and valves are required to verify that systems and components are reliable and functionally capable of performing their design function. Inspection will review the adequacy of test procedures to test those design functions being verified. Important design functions not verified by testing will be subject to risk informed design inspection. Surveillance testing is the minimum required testing specified in the facility license and ensures that a conservative safety margin exists for system capability. Operating experience has shown that test procedure deficiencies may invalidate previously acceptable test results and improper testing could result in undisclosed problems that last until the next required testing creating long periods of unknown equipment inoperability. | |
| Performance Indicators: The PIs indirectly verify the adequacy of required surveillance test activities. This inspection is performed to provide insights into licensee performance in addition to those provided by the PIs. | |
| Significant Changes in Scope or Basis:<br><br>April 2000 - Procedure incorporated requirements and guidance to review licensee's inservice testing activities, containment isolation valve and ice condenser system surveillances.<br><br>January 2002 - Revised to incorporated minor changes to the inspection requirements. In addition, inspection resources estimates and inspection level of effort are revised to provide a band for more inspection flexibility.<br><br>May 2004 - Revised to include RCS leak detection system surveillance as part of the surveillance testing sample. Revision also includes surveillance testing attributes for reviewing annunciators/alarms setpoints and alarms response procedure actions. | |

Figure 22 Surveillance Testing Basis Summary Sheet (IP 71111.22)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Reserved | |
| Cornerstone(s): | Inspection Procedure: IP 71111.23 |
| Scope: | |
| Basis: | |
| Performance Indicators: | |
| Significant Changes in Scope or Basis: | |

Figure 23 Reserved Basis Summary Sheet (IP 71111.23)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Biennial Exercise and Drill Inspection | |
| Cornerstone(s): Emergency Preparedness | Inspection Procedure: IP 71114.01, IP 71114.06, IP 71114.07 and IP 71114.08 |

Scope: This inspection area consists of two major aspects:
1. Verification of the licensee challenging drill and exercise program performed under IP 71114.08 “Exercise Evaluation – Scenario Review” and
2. Evaluation and verification of the licensee’s capability to appropriately critique drill and exercise program performance performed under IP 71114.01, IP 71114.06 “Drill Evaluation” and IP 71114.07 “Exercise Evaluation - Hostile Action (HA) Event.”

Basis: This inspection area supports the EP cornerstone through the emergency response organization (ERO) Readiness, Facilities and Equipment, Procedure Quality and ERO Performance key attributes.
The implementation of the Emergency Plan is dependant on the performance of the ERO in their EP assignments. There are many areas important to Plan implementation, but the most risk significant areas (RSPS) of ERO performance are:

- Timely and accurate classification of events; including the recognition of events as potentially exceeding emergency action levels and any assessment actions necessary to support the classification.
- Timely and accurate notification of offsite governmental authorities; including adequate performance of notifications as specified in the Plan.
- Timely and accurate assessment and monitoring of actual and or potential offsite radiological release consequences during an emergency.
- Timely and accurate development and communication of protective action recommendations to offsite authorities; including providing protective action recommendations (PARs) to governmental authorities, the decision making process to develop the PARs and any accident assessment necessary to support PAR development.

The inspection scope verifies the licensee Emergency Preparedness (EP) drill and exercise program provides opportunities to develop and maintain the key skills to perform the major functions of the emergency response plan and that unacceptable performance in the implementation of the emergency plan is identified and corrected. It also verifies the efficacy and veracity of the critique program used to develop the success rate reported by the drill/exercise performance (DEP) performance indicators (PI) success rate of risk significant planning standard performance.
Consistent timely and accurate ERO performance of these activities indicates that ERO performance is within the licensee response band and that NRC oversight can be through the risk informed baseline inspection program

Performance Indicators:
The DEP PI has been developed to indicate performance in the RSPSs of EP. The data used to develop the DEP PI value is based on licensee critiques of RSPS performance during actual events, drills, exercises and appropriate training evolutions. These inspections verify the efficacy of the licensee critique program.

Significant Changes in Scope or Basis:
April 2000 - The review of licensee correction of weaknesses was initially performed within the scope of 71114.01. This was seen as supportive to preparation for observation of the exercise, but proved to be too demanding of licensee and inspection staff. Licensee focus during the week of the exercise is proper scenario conduct. Providing corrective action

| Basis Summary Sheet |
| --- |
| Inspectable Area: Biennial Exercise and Drill Inspection |
| documentation and staff for discussion to NRC detracts from the primary focus. The review of weakness correction was moved to 71114.05.<br><br>June 2006 - Rewrite of document structure to align with MC 0612 and SDP Appendix B. Added guidance for review and understanding of DHS deficiencies per SRM to SECY-05-0045 and restored previously deleted inspection commitment to ensure E-Plans and EPIPs contain criteria non-essential onsite personnel protective actions, including evacuation for Site Area Emergencies and General Emergencies<br>May 2012 - Re-write of document structure to align with MC 0040 “Preparing, Revising and Issuing Documents for the NRC Inspection Manual” and make changes in support of the 2011 final EP rulemaking including: scenario review; classification timeliness; review of backup and alternate facilities and demonstration of 50.54(hh)(2) strategies, procedures guidance. |

Figure 24 Biennial Exercise and Drill Inspection (IP 71114.01, .06, .07 and .08)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Alert and Notification System Testing | |
| Cornerstone(s): Emergency Preparedness | Inspection Procedure: IP 71114.02 |
| Scope: Inspection in this area includes a review of testing and maintenance activities for the Alert and Notification System (ANS) in order to assess licensee compliance. | |
| Basis: This inspection area supports the Emergency Preparedness (EP) cornerstone through the Facilities and Equipment key attribute.<br><br>The ANS is the most important system/equipment maintained by the EP program. The purpose of the EP program is to implement adequate measures to protect the public health and safety in the event of a radiological emergency and the ANS is the method used for notifying the public of the need to take such protective actions. Generally the licensee maintains the ANS and local governmental authorities operate it when necessary.<br><br>A highly reliable ANS increases the assurance that the public health and safety can be protected during an emergency. As long as the ANS reliability remains high the NRC's oversight is through the risk informed baseline inspection program. The ANS PI measures the reliability of the ANS based on the results scheduled testing program. This inspection verifies the licensee's compliance with their Federal Emergency Management Agency approved ANS design report testing requirements. | |
| Performance Indicators: The ANS PI provides a uniform industry reporting of the ANS reliability. A site that does not have sirens as part of the FEMA approved ANS design does not report data for this PI and the licensee's ANS performance is evaluated only through the NRC baseline inspection program. | |
| Significant Changes in Scope or Basis:<br><br>June 2012 - Added inspection requirement and guidance to address the 2011 EP rule enhancement requirements for backup ANS capability. | |

Figure 25 Alert and Notification System Testing Basis Summary Sheet (IP 71114.02)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Emergency Response Organization Augmentation Testing | |
| Cornerstone(s): Emergency Preparedness | Inspection Procedure: IP 71114.03 |
| Scope: Inspection in this area involves a review of licensee Emergency Response Organization (ERO) member qualifications, the processes and equipment that would be used for an emergency. Licensees normally conduct tests of the augmentation system and the people assigned to the ERO to ensure that emergency response facilities can be staffed in accordance with the emergency response plan activation commitments. Licensee ability to identify and disposition augmentation corrective actions is also inspected. | |
| Basis: This inspection area supports the Emergency Preparedness (EP) cornerstone through the ERO Readiness, Procedure Quality and Facilities and Equipment key attributes.<br><br>The licensee system to augment the on-shift staff with ERO members is an important process in implementing the Emergency Plan. This inspection involves the verification of: ERO augmentation system testing to ensure notification of individual ERO members, ERO member training and qualification records, that emergency plan facility activation commitments can be meet. | |
| Performance Indicators: No PIs were established that cover this area. | |
| Significant Changes in Scope or Basis:<br><br>October 2006 - Revised IP to add objective for explicit review of adequate ERO staffing levels using NUREG-0654, Table B-1 as the standard. Added clarification on the review of ERO responder training and qualifications. | |

Figure 26 Emergency Response Organization Augmentation Testing Basis Summary Sheet (IP 71114.03)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Emergency Action Level and Emergency Plan Changes | |
| Cornerstone(s): Emergency Preparedness | Inspection Procedure: IP 71114.04 |
| Scope: Inspection activities in this area include a review of all changes to the Emergency Action Levels (EALs) and a sampling of changes to the Emergency Plan (Plan). | |
| Basis: This inspection area supports the Emergency Preparedness (EP) cornerstone through the Procedure Quality key attribute.<br><br>Recognition and subsequent classification of events is a risk significant activity (RSPS) because classification leads to activation of the Emergency Response Organization, notification of governmental authorities and in the extreme, development of protective action recommendations. However, if the EAL scheme is not in compliance with NRC approved classification schemes, the expected emergency classification may not occur. Appendix E to 10 CFR Part 50 requires licensees to have and maintain an NRC approved EAL scheme. 10 CFR 50.54(q) allows licensees to make changes to the Plan and EAL scheme as long as the changes do not reduce the effectiveness of the Plan or scheme without prior NRC approval. This inspection is the method for NRC inspectors to review all EAL changes and a sample of Plan changes. | |
| Performance Indicators: No PIs were established that cover this area. | |
| Significant Changes in Scope or Basis:<br>April 2000 - Initially, only the EAL element was addressed in this IP. The plan review was combined with an IP which also addressed UFSAR and Safeguards Plan changes. This was found to be cumbersome and the Plan elements were placed in this IP.<br><br>October 2006 – Revised the IP to capture RIS 2005-02 “Clarifying the Process for Making Emergency Plan Changes” guidance for making Emergency Plan changes that included (1) clarification of the meaning of “decrease in effectiveness,” as stated in 10 CFR 50.54(q); (2) clarification of the process for evaluating proposed changes to emergency plans; (3) a method for evaluating proposed changes to emergency plans; and (4) clarifying guidance on the appropriate content and format of applications submitted to the NRC for approval prior to implementation.<br><br>October 2008 – Revised to incorporate a review of security-related Emergency Action Levels and Emergency Plan changes.<br><br>July 2016 – Reformatted the IP to align with IMC 0040 “Preparing, Revising and Issuing Documents for the NRC Inspection Manual” formatting expectations. Changed “decrease in effectiveness” to “reduction in effectiveness.” Added an inspection requirement to review 10 CFR 50.54(q) emergency plan change process, practice and guidance. Updated 10 CFR 50.54(q) description in accordance with the December 2011 EP rule enhancement. Added the 10 CFR 50 Appendix E.IV.B guidance for a licensee desiring to change its entire EAL scheme would require prior NRC approval before implementing the change and that less substantial EAL changes may be made using the § 50.54(q) process. | |

Figure 27 Emergency Action Level and Emergency Plan Changes Basis Summary Sheet (IP 71114.04)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Correction of Emergency Preparedness Weaknesses and Deficiencies | |
| Cornerstone(s): Emergency Preparedness | Inspection Procedure: IP 71114.05 |
| Scope: Evaluate the licensee efforts to maintain their Emergency Preparedness (EP) program by verifying accurate and appropriate identification and correction of EP weaknesses noted during actual event critiques, drill and exercise critiques and program self-assessment activities. | |
| Basis: The licensee drill and exercise critique program (and other self-assessment processes) are expected to identify ERO performance weaknesses and other problems that would detract from the Plan implementation. The identification of repeat items, trends and the appropriate disposition of corrective actions are inspected. The ability to identify and correct problems is integral to the efficacy of an EP program. The ability to identify drill and exercise weaknesses are inspected under IP 71114.01 & .06. This inspection addresses the licensee ability to identify and correct weaknesses in a timely manner. The inspection is meant to include all the licensee efforts that assess the EP program and or the ERO performance such as, but not limited to<br>• Self assessment reports including all reports of actual events and missed classification of actual events,<br>• Biennial exercise and drill critiques,<br>• Audits conducted under 10 CFR 50.54(t), and<br>• Assessments performed by the Quality Assurance organization. | |
| Performance Indicators: No PI's were established that cover this area. | |
| Significant Changes in Scope or Basis:<br><br>October 2006 - Revised inspection procedure (IP) to clarify the inspection is to focus on the timeliness and effectiveness of corrective action associated with 10 CFR 50.47(b)(14) and conform to the reactor oversight program emphasis on correction of EP weaknesses.<br><br>May 2012 – Reformatted IP in accordance with IMC 0040 "Preparing, Revising and Issuing Documents for the NRC Inspection Manual" formatting expectations. Added inspection requirements and guidance for review of licensee: letters of agreement and/or memorandums of understanding, 10 CFR 50.54(q) plan change process and practice, maintenance of equipment important to emergency preparedness, record(s) of evacuation time estimate population evaluations, and emergency plan provisions for, and implementation of, primary, backup and alternate emergency response facility maintenance<br><br>July 2016 - Added note stating NUREG-0654 Sup 3 dated July 1996 is no longer acceptable guidance. Added inspection requirements and guidance for reviewing protective action recommendation strategy procedures and the incorporation and implementation of evacuation time estimate updates. | |

Figure 28 Correction of Emergency Preparedness Weaknesses and Deficiencies Basis Summary Sheet (IP 71114.05)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Access Control to Radiologically Significant Areas | |
| Cornerstone(s): Occupational Radiation Safety | Inspection Procedure: IP 71124.01, IP 71124.02, IP 71124.04 and IP 71124.08 |
| Scope: Inspection procedures (IPs) in this Inspectable Area evaluate aspects of licensee radiation protection programs that control access to radiologically significant areas. These areas include airborne radioactivity areas, high radiation areas, very high radiation areas and areas used to store radioactive materials or radioactive waste that is radiologically significant. Hazard assessments and access controls form the foundation of licensee efforts within this area. Hazard assessments include identification and proper characterization of radiological conditions to identify the extent of radiation levels, contamination levels and airborne concentrations or quantities of radioactive materials that comprise the radiological hazard (e.g., radiological surveys and monitoring). Access controls include instructions to workers (e.g., training, radiation work permits and pre-job briefings); physical barriers or engineered controls (e.g., locked doors, fences, ropes); postings and warning lights and supervision of radiation workers by qualified radiation protection personnel. | |
| Basis: Inspection in this area supports the Occupational Radiation Safety Cornerstone of the Reactor Oversight Process.<br><br>As required by 10 CFR Part 19 and 10 CFR Part 20, licensees shall ensure they provide adequate access controls to radiologically significant areas and adequate instructions to workers accessing these areas. In general, adequate protection from routine exposures is demonstrated by maintaining the resultant doses below the applicable limits of 10 CFR Part 20 Subpart C and as low as is reasonably achievable (ALARA).<br><br>The Occupational Exposure Control Effectiveness Performance Indicator (PI) monitors the control of access and work activities within radiologically significant areas as well as occurrences involving the degradation, or failure, of radiation safety barriers that result in unintended dose. However, this PI does not provide oversight in situations where the radiological hazards are not adequately reflected by the dose outcome (e.g., substantial potential exists for an overexposure or substantial release of radioactive materials). | |
| Performance Indicators: Occupational Exposure Control Effectiveness | |
| Significant Changes in Scope or Basis:<br><br>June 2017 – Revised as follows:<br>- Scope was revised to more clearly identify it as the scope of the Inspectable Area, not necessarily a specific IP attachment. Multiple attachments in IP 71124 (IP 71124.01, IP 71124.02, IP 71124.04 and IP 71124.08) are applicable to this Inspectable Area<br>- The Basis was revised to specifically identify the applicable PI and more accurately describe the interface between the PI and the Inspectable Area. | |

Figure 29 Access Control to Radiologically Significant Areas Basis Summary Sheet (IPs 71124.01, 71124.02, 71124.04, and 71124.08)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: ALARA Planning and Controls | |
| Cornerstone(s): Occupational Radiation Safety | Inspection Procedure: IP 71124.01, IP 71124.02, and IP 71124.03 |
| Scope: Inspection procedures in this Inspectable Area verify that the licensee establishes and maintains adequate procedures and engineering controls, based on sound radiation protection principles to achieve occupational doses that are as low as is reasonably achievable (ALARA). Controls, as stated here, refer to those physical barriers (e.g., locked doors, ropes, shielding, respiratory protection, engineered devices) and administrative barriers (e.g., surveys, planning, procedures, training, monitoring) that serve to mitigate radiation exposure. Work activities with a potential for a high individual and/or collective dose; that are performed in an area of high radiological risk; or are of concern because of industry or licensee experience (e.g., spent fuel pool diving) are prioritized in this inspection area.<br><br>Inspections in this area focus on the reasonableness of dose goals that are the outcome of ALARA planning and whether the licensee's performance results in achieving those ALARA goals. Inspections in this area include observing selected activities to verify that the assumptions underlying ALARA planning are valid and that the appropriate controls are implemented. Inspections also review licensee assessments of radiation protection programs to determine whether adequate administrative controls, management oversight, and exposure controls (e.g., source term reduction, physical barriers, surveys and monitoring) were applied. | |
| Basis: Inspection in this area supports the Occupational Radiation Safety Cornerstone of the Reactor Oversight Process.<br><br>As required by 10 CFR Part 20, licensees shall use, to the extent practicable, procedures and engineering controls based on sound radiation protection principles to achieve occupational doses that are ALARA. Additionally, 10 CFR Part 20, provides regulatory requirements for maintaining total effective dose equivalent ALARA when it is not practical to apply process or other engineering controls to control the concentration of radioactive material in the air below airborne radioactivity area levels.<br><br>Performance within this Inspectable Area is judged on whether the licensee has taken appropriate measures to track, and if necessary, to reduce exposures and not whether each individual exposure and dose represents an absolute minimum, or whether the licensee has used all possible methods to reduce exposures. | |
| Performance Indicators: None | |

| Basis Summary Sheet |
| --- |
| Inspectable Area: ALARA Planning and Controls |
| Significant Changes in Scope or Basis:<br><br>June 2017 – Revised as follows:<br>- Scope was revised to more clearly identify it as the scope of the Inspectable Area, not necessarily a specific IP attachment. Multiple attachments in IP 71124 (IP 71124.01, IP 71124.02 and IP 71124.03) are applicable to this Inspectable Area<br>- Scope and Basis revised to be consistent with Part 20 language and to add reference to respiratory protection |

Figure 30 ALARA Planning and Controls Basis Summary Sheet (IPs 71124.01, 71124.02, and 71124.03)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Radiation Monitoring Instrumentation | |
| Cornerstone(s): Occupational Radiation Safety | Inspection Procedure: IP 71124.04 and IP 71124.05 |
| Scope: This Inspectable Area verifies the licensee is performing surveys to ensure compliance with radiation protection regulations and that these surveys are reasonable to evaluate the magnitude and extent of radiation levels, contamination levels, airborne concentrations, quantities of residual radioactivity and potential radiological hazards. Procedures associated with this Inspectable Area verify proper operation of equipment used in surveys and monitoring (e.g., criticality and post-accident monitors; area radiation monitors; continuous air monitors; containment dome monitors; portable survey equipment; personnel dosimetry; whole body counting equipment and other equipment used in dose assessment and monitoring). Inspections verify that equipment is calibrated and operated in accordance with manufacturers' recommendations and licensee procedures; that dosimetry is processed by appropriately accredited processors; and that the results of monitoring are reasonably interpreted and recorded. Specific attention will be given to exposures in excess of the occupational dose limits and exposures to Declared Pregnant Workers, because of the inherent risk and public interest.<br><br>Inspections in this area will not include monitors that a licensee has included under their Maintenance Rule program. | |
| Basis: Inspection in this area supports the Occupational Radiation Safety Cornerstone of the Reactor Oversight Process. 10 CFR Part 20 Subpart F requires that licensees surveys to ensure compliance with radiation protection regulations and that these surveys are reasonable to evaluate the magnitude and extent of radiation; concentrations and quantities of radioactivity; and potential radiological hazards. Additionally, Subpart F requires that equipment used for the quantitative measurement of radiation be properly calibrated for the radiation measured. | |
| Performance Indicators: None | |
| Significant Changes in Scope or Basis:<br><br>June 2017 – Revised as follows:<br>- Scope was revised to more clearly identify it as the scope of the Inspectable Area, not necessarily a specific IP attachment. Multiple attachments in IP 71124 (IP 71124.04 and IP 71124.05) are applicable to this Inspectable Area.<br>– Scope revised to be consistent with Part 20 language, to reference personnel dosimetry and to reference overexposures and monitoring of DPWs, these areas were moved from the previous basis sheet on ALARA planning and controls.<br>- Basis revised to align language with Part 20 | |

Figure 31 Radiation Monitoring Instrumentation Basis Summary Sheet (IPs 71124.04 and IP 71124.05)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems | |
| Cornerstone(s): Public Radiation Safety | Inspection Procedure: IP 71124.05, IP 71124.06 and IP 71124.07 |

Scope: Inspection procedures (IPs) in this Inspectable Area verify that licensees maintain gaseous and liquid radioactive effluent treatment systems such that radiological releases are properly mitigated, monitored and assessed. Inspections verify that radiological effluent releases are controlled in accordance with license conditions and regulatory limits; that modification of equipment used to treat or monitor effluents is properly controlled; and that radiological effluent and meteorological monitors are accurate and reliable. Additionally, inspections ensure certain aspects of post-accident monitoring; especially those aspects that contribute to the declaration of emergency action levels and protective action recommendations.

The baseline program includes a review of the Annual Radiological Effluent Release Report to verify the effluent program is being implemented as described in the licensee's Offsite Dose Calculation Manual (ODCM). Specific areas of review include calibration, operation and modifications of the gaseous and liquid radiological effluent monitors; calibration, operation and modifications of the site meteorological monitoring system; and operation and modifications to the radioactive waste treatment system. Inspections also include walk-downs of the gaseous and liquid radioactive processing and monitoring systems to observe routine activities, equipment condition and to verify deficiencies are corrected. Additionally, inspectors review dose calculations for adequacy.

Basis: Inspection in this area supports the Public Radiation Safety Cornerstone.

Requirements associated with radioactive effluent treatment, monitoring and reporting are found in license conditions, 10 CFR 50.36a, the licensee's ODCM and Subpart D to 10 CFR Part 20. Additionally, 10 CFR Part 20.1101(b) requires licensees to use—to the extent practical—procedures and engineering controls to achieve doses to members of the public that are as low as is reasonably achievable (ALARA). Per 10 CFR 50.36a(b), doses below the design objectives contained in Appendix I to 10 CFR Part 50 are considered ALARA. As discussed in the Federal Register (49 FR 2859), for licensees emitting direct radiation that is indistinguishable from background radiation levels, maintaining doses from effluents below the Appendix I design objectives demonstrates compliance with 40 CFR 190 (imposed by 10 CFR Part 20.1301(e) on NRC licensees). Licensees who have sources of direct radiation that are above background must account for doses that result from direct radiation sources in addition to doses from effluents when demonstrating compliance with 10 CFR Part 20.1301(e).

Additionally, regulatory requirements associated with post-accident effluent monitoring capability are described in Appendix E to 10 CFR Part 50 and plant-specific requirements are reflected in licensee-specific emergency plans and procedures.

This Inspectable Area is complemented by the RETS/ODCM Radiological Effluent Occurrence Performance Indicator (PI). The related PI is based on calculated radiation doses to members of the public from the routine release of gaseous and liquid radioactive effluents. However, the PIs do not monitor all aspects of radiological effluent treatment and monitoring

| Basis Summary Sheet |
| --- |
| Inspectable Area: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems |
| systems. For example, identification and mitigation of unmonitored release paths; control of modifications to treatment and monitoring systems and proper operation, maintenance, calibration and set point control of effluent monitoring equipment are areas that require inspection to ensure effluent releases are properly mitigated, monitored and assessed. |
| Performance Indicators: RETS/ODCM Radiological Effluent Occurrence |
| Significant Changes in Scope or Basis:<br><br>June 2017 – Revised as follows:<br>- Scope was revised to more clearly identify it as the scope of the Inspectable Area, not necessarily a specific IP attachment. Multiple attachments in IP 71124 (IP 71124.05, IP 71124.06 and IP 71124.07) are applicable to this Inspectable Area |

Figure 32 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems Basis Summary Sheet (IPs 71124.05, 71124.06, and 71124.07)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Radioactive Material Processing and Transportation | |
| Cornerstone(s): Public Radiation Safety | Inspection Procedure: IP 71124.08 |
| Scope: Inspection procedures in this area verify that appropriate administrative and physical controls are implemented by licensees for the storage, processing and transportation of radioactive material and radioactive waste (i.e., Class A, B, C, greater than Class C [GTCC] and irradiated fuel shipments). Inspections verify that radioactive material storage, control ~~and~~ , posting and shipping requirements are being met and that radioactive waste is characterized and shipped in accordance with regulatory requirements. Inspectors perform walkdowns of radioactive waste processing systems to verify that the systems are in good material condition and that modifications are appropriately controlled. Additionally, inspectors review and observe selected risk-significant shipping, waste characterization and classification activities to ensure waste characterization and manifesting requirements are being met. Additionally, inspections in this area verify that U.S. Department of Transportation (DOT) and NRC transportation requirements are met by reviewing applicable licensee documentation. | |
| Basis: This inspection will verify that the radioactive material processing and transportation program comply with the requirements of 10 CFR Parts 20 and 71 and DOT regulations 49 CFR Parts 170-189. Radioactive material intended for disposal must also comply with 10 CFR 61.55 - 61.57 waste classification and stability requirements.<br><br>The regulations contain specific physical and administrative controls that provide a defense-in-depth approach for the safe processing and transport of radioactive material, including situations involving the breach of a loaded transport package. Although there is a low frequency of industry events, the actual or potential consequence (i.e., significant exposures or release of radioactive material) can be high. Therefore, the NRC has determined that an independent assessment of performance in this area is necessary to ensure that adequate protection of public health and safety is maintained. | |
| Performance Indicators: There is no Performance Indicator for this area. | |
| Significant Changes in Scope or Basis:<br><br>March 2002 - Revised to add the requirement to review the licensee's audit program to verify that it complies with the requirements of 10 CFR 20.1101(c). The base inspection hours were increased and a range of inspection hours was established based on actual inspection hours during the first year of ROP implementation.<br><br>June 2017 – Revised as follows:<br>- Scope was revised simplify language and distinguish between material and waste. | |

Figure 33 Radioactive Material Processing and Transportation Basis Summary Sheet (IP 71124.08)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Radiological Environmental Monitoring Program (REMP) | |
| Cornerstone(s): Public Radiation Safety | Inspection Procedure: IP 71124.07 |
| Scope: Inspection procedures in this Inspectable Area ensure that Radiological Environmental Monitoring Programs (REMPs) suitably measure and report the effects of radioactive releases to the public and environment so that the relationship between effluents and doses to individuals from principle pathways can be evaluated. This area focuses on the programs licensees use to collect and process (i.e., analyze for the type and amount of radioactive material) environmental samples, and how licensees evaluate the results of environmental monitoring to determine the impact of plant operation on the environment.<br><br>Inspections include walk-downs of environmental sampling stations; observations of environmental sampling and analyses; and evaluations of radiation detection and meteorological instrumentation calibration and maintenance. Document reviews verify environmental sampling and analyses were completed, that results are representative of the radioactive effluent release pathways and that any problems (e.g., missed samples and/or inoperable sampling/analyses equipment) are appropriately addressed. | |
| Basis: The basis for effluent monitoring is described in Figure 32. The REMP supplements annual effluent reports required by plant Technical Specifications and 50.36a by comparing the results of environmental monitoring with the effluent monitoring. The REMP is required by radiological technical specifications and is an integral component in licensees demonstrating compliance with the design objectives of Appendix I to 10 CFR Part 50 (as described in Section IV to Appendix I) and ultimately the public dose limits imposed by 10 CFR 20.1301(e).<br><br>The NRC has determined that an independent assessment of performance in this area is necessary to ensure that adequate protection of the public health and safety is maintained. | |
| Performance Indicators: There are no Performance Indicators for these areas. | |
| Significant Changes in Scope or Basis:<br><br>June 2017 – Revised as follows:<br>- Scope was revised to more clearly identify it as the scope of the Inspectable Area, not necessarily a specific IP.<br>- Language in the Scope was simplified and revised to be consistent with 50.36a and Appendix I to 10 CFR Part 50<br>- Removed references to radiological material control program; this area is evaluated as described in Figure 33<br>- Basis revised to align with language of Appendix I and to draw a nexus between REMP and demonstration of compliance with 10 CFR 20.1301(e) | |

Figure 34 Radiological Environmental Monitoring Program (REMP) Basis Summary Sheet (IP 71124.07)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Discrepant or Unreported Performance Indicator Data | |
| Cornerstone(s): All Seven | Inspection Procedure: IP 71150 |
| Scope: In the absence of reliable licensee-provided performance indicator (PI) data, the NRC inspector either independently obtains PI data or performs inspections in order to obtain insights on licensee performance. | |
| Basis: SECY-99-007 and this basis document describe the cornerstone attributes considered in the development of each PI. In the absence of reliable data for a PI, the region performs additional baseline and other inspections which cover these attributes.<br><br>As a function of the particular PI, NRC effort for independent collection of PI data may be significantly greater than for the sampling done in PI verification, per IP 71151. Resource estimates for NRC inspection in lieu of obtaining PI data shall be based upon the underlying framework of the cornerstone, baseline and other inspections that could provide insights into the cornerstone attributes, and the level of effort required to achieve the inspection objective. | |
| Significant Changes in Scope or Basis:<br><br>September 2000 - Issued to obtain PI data when licensees fail to provide PI data, or provide data having major discrepancies, or when NRC loses confidence in the licensee's ability to collect and report PIs. The IP will also utilize inspections for providing licensee performance insights when NRC is unable to obtain reliable PI data.<br><br>March 2001 - Revised to better define the criteria of NRC losing confidence in a licensee's ability to collect and report performance indicators. | |

Figure 35 Discrepant or Unreported Performance Indicator Data Basis Summary Sheet (IP 71150)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Performance Indicator Verification | |
| Cornerstone(s): All Seven | Inspection Procedure: IP 71151 |
| Scope: This item includes verification of all 17 performance indicators (PIs). | |
| Basis: The objective of this inspection is to perform periodic reviews of PI data to determine its accuracy and completeness. PI verification inspections should consist of a "sampling" of PI data, not validation of the PI value.<br><br>Each performance indicator will be verified annually. The performance indicator verifications will be planned inspections during which either a resident or regional inspector will review a sample of plant records and data against the reported performance indicators. In addition to the review of various plant records, the inspector may also, where applicable and as needed, observe the plant activity that generates a PI data input. These observations can be performed as part of the various inspectable areas within the cornerstone inspection procedures.<br><br>A review of licensee self assessment shall not be substituted for independent inspector verification of PIs. | |
| Significant Changes in Scope or Basis:<br><br>March 2001 - Provided guidance for the documentation of minor PI reporting discrepancies to be consistent with the application of 10 CFR 50.9 per the revised enforcement policy. With a few exceptions, minor reporting discrepancies should not be documented.<br><br>January 2007 – Revised to remove Safety System Unreliability Index and add Mitigating System Performance Index verification.<br><br>June 2007 – Replaced Unplanned Scrams with loss of Normal Heat Sink with Unplanned Scrams with Complications.<br><br>December 2016 – Reduced inspection effort estimates by half to comply with requirements of SRM SECY-16-009. | |

Figure 36 Performance Indicator Verification Basis Summary Sheet (IP 71151)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Identification and Resolution of Problems/Issues | |
| Cornerstone(s): All seven | Inspection Procedure: IP 71152 |
| Scope: This item will verify that the licensee has an effective problem identification and resolution program. Problem identification and resolution refers to: (1) the deficiency reporting process; (2) licensee self-assessments; and (3) Quality Assurance audits. Additionally, in some plants each department may have its own problem identification and resolution program. The focus of the inspection is on the licensee's effectiveness in identifying, resolving and preventing risk significant problems. | |
| Basis: The objective of this inspection is to ensure that the licensee effectively assesses performance to identify and correct situations that could impact the cornerstone objectives.<br><br>An effective problem identification and resolution program is the primary means of reducing risk by correcting deficiencies involving people (i.e., training, knowledge and skills), processes (i.e., procedures and programs), and equipment (i.e., design and maintenance) before they manifest in a significant event affecting the health and safety of workers or the public. Industry experience indicates that licensees having an effective program for identifying and resolving problems also have a reduced frequency of events.<br><br>The inspection should verify that: (1) the licensee's assessments of problems and issues were of sufficient scope to address the key attributes of the cornerstone; (2) the risk significance of the findings was properly assessed; (3) cause analyses and corrective actions were timely and adequate to prevent recurrence; (4) industry and NRC generic issues were considered; (5) required reports to the Commission or input to a PI were made; and (6) the performance trend indicated by the sample set was consistent with the applicable PIs.<br><br>Additional sampling of the licensee's performance assessment feedback loop is required if: (1) recurrent issues or highly risk significant findings were identified; (2) adequate corrective actions were not taken in response to a declining trend or performance above a PI threshold; or (3) the NRC or licensee assessment results indicate risk significant findings that should have been manifested in a negative PI trend.<br><br>An observed discrepance between PI data and NRC or licensee findings is indication that additional review of PRA assumptions, re-verification of applicable PIs and an assessment of changing risk may be required. | |
| Performance Indicators: None of the established PIs cover this area. However, some insight may be obtained from the PIs developed for each cornerstone, which may reduce the overall inspection effort in this area. | |
| Significant Changes in Scope or Basis:<br><br>December 2001 - Decreased the frequency of the inspection from annual to biennial and added the inspection of three to six PI&R samples per year. Based on experience and lessons learned during initial implementation, it was determined that an annual team inspection into PI&R was not necessary to gain insights into licensee performance. This was due to the other methods available in the inspection program to assess PI&R more frequently, and the fact that it is not likely that significant PI&R program degradations would occur from one year to the next. | |

| Basis Summary Sheet |
| --- |
| Inspectable Area: Identification and Resolution of Problems/Issues |
| September 2003 - revised to incorporate recommendations made by the PI&R focus group to address several items from the Davis-Besse Lessons Learned Task Force. The changes include enhanced requirements regarding the routine PI&R reviews conducted by resident inspectors, biennial reviews of longstanding issues, and biennial reviews of operating experience issues. |

Figure 37 Identification and Resolution of Problems/Issues Basis Summary Sheet (IP 71152)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Event Followup | |
| Cornerstone(s): All Seven | Inspection Procedure: IP 71153 |
| Scope: Evaluate licensee events and degraded conditions regarding plant status and performance of equipment/operators in order to provide input to senior management and risk analysts in determining the need for an Incident Investigation Team (IIT), Augmented Investigation Team (AIT), or Special Inspection (SI). Review written event reports. | |
| Basis: In accordance with Management Directive 8.3, "NRC Incident Investigation Program", senior NRC management makes decisions regarding the level of investigatory response for a significant operational event or degraded condition. These decisions are based upon deterministic and risk criteria. On-site inspectors review plant status and equipment/operator performance in order to provide inputs to senior management and risk analysts as required to evaluate event/degraded condition regarding the deterministic and risk criteria.<br><br>Inspector effort for events and degraded conditions may range from minimal up to 24 hours for significant operational events to allow the inspectors to gather sufficient information to determine the need for an SI, AIT, or IIT per the MD 8.3 criteria. LER review may range from 1-8 hours depending on the significance and complexity of the issue documented. | |
| Significant Changes in Scope or Basis:<br><br>April 2000 - revised to provide inspection requirements and guidance for review of event reports<br><br>March 2001 - revised to better define the scope of the inspection procedure (IP), to expand the definition of power reactor events to include degraded conditions, and to integrate the IP with the options for inspection activities related to the deterministic and risk criteria in Management Directive 8.3<br><br>January 2002 - revised to delete the previous Appendix A since that material was included in MD 8.3 It also clarifies that written LERs are actuations, as allowed in 10 CFR 50.73.<br><br>June 2003 - revised to provide clarification that the risk metric for events is Conditional Core Damage Probability (CCDP) and the metric for degraded conditions is incremental CCDP. Also this revision lists examples of events addressed by this IP in cornerstones outside of reactor safety. | |

Figure 38 Event Follow-up Basis Summary Sheet (IP 71153)

| Basis Summary Sheet | |
|---|---|
| Title: Light-Water Reactor Inspection Program - Operations Phase | Procedure Number: IMC 2515 |
| Scope: All commercial power reactors licensed to operate until permanently shut down, when they enter the post-operational phase (after the certification date for removing all nuclear fuel from the reactor vessel [10 CFR 50.82(a)(1)(ii)]) | |
| Basis: Atomic Energy Act; 10CFR50.70, "Inspections" | |

Significant Changes in Scope or Basis:

April 2000 - Rewritten to accommodate the newly implemented ROP, recognizing the risk-informed baseline inspection program, supplemental inspections, cornerstones, and performance indicators. Includes a discussion of ROP framework and inspection's role in it.

January 2002 - Revised to clarify guidance for distributing inspection effort across units at multi-unit sites, and focusing efforts if no inspection opportunities area available.

January 2003 - Revised to define what constitutes a baseline inspection program completion for an annual ROP inspection cycle.

February 2004 - Revised to reflect changes to define the inspection periodicity requirements for biennial and triennial inspections. Revised to allow early assignment of replacement senior and resident inspectors to a site prior to the end of the tour of the incumbent.

July 2005 - Revised to address recommendations from the Office of Inspector General's audit of the NRC's baseline inspection program:

- Provided guidance on inspection program expectation that nominal number of samples should be inspected for each inspection procedure during a ROP cycle.
- Provided additional management guidance for assigning inspectors to perform inspection procedures to ensure that inspectors are adequately qualified for their assignments.
- Improved inspection guidance on whether performance of one inspection procedure sample can be counted as a sample for another
- Clarified expectations and requirements for which inspection procedures cannot be deferred, plants where procedures cannot be deferred, criteria for deferring a procedure and reporting requirements when inspections are deferred
- Added a program requirement for regions to maintain an inspection tracking system so that no more than four inspection procedures are deferred in a calendar year.

March 2017 - Revised to add section discussing a process for "Coordination of Regional Requests for Headquarter Staff to Participate in the Conduct of Inspection Activities." The intention was to document availability of a potentially less burdensome process. It was not the intention to exclude pursuit of other existing processes.

Figure 39 Light Water Reactor Inspection Program - Operations Phase Basis Summary Sheet (IMC 2515)

| Basis Summary Sheet | |
|---|---|
| Title: Risk-Informed Baseline Inspection Program | Procedure Number: IMC 2515, Appendix A |
| Scope: All commercial power reactors licensed to operate until permanently shut down and not in an extended shut down for performance problems (IMC 0350) | |
| Basis: Structure and scope of the program based on risk-informed decisions on what aspects of licensed operations are important to safety and risk. Structure, original areas for inspection, and scope of the areas are described in SECY-99-007, which formed the basis for the inspection procedure bases documents. Scope of inspectable areas based on applicability of any performance indicators within the area. | |
| Significant Changes in Scope or Basis:<br>April 2000 - Essentially a new document for the baseline inspection program. Explains the concept and philosophies behind the ROP and baseline inspection concepts.<br><br>September 2000 - Revised to correct the frequency listed for baseline IP 71111.11 from A/B to Q/B, and to reflect the change in frequency for 71130.03 from biennial to triennial. No change in hours has resulted from this change.<br><br>March 2001 - Added guidance to clarify how to close IPs with fewer samples inspected. Explains the meaning of the cornerstone tables in the attachments to IP 71111. Other changes included editorial changes and removing duplication with IMC 2515. | |

Figure 40 Risk Informed Baseline Inspection Program Basis Summary Sheet (IMC 2515, Appendix A)

| Basis Summary Sheet | |
|---|---|
| Title: Supplemental Inspection Program | Procedure Number: IMC 2515, Appendix B |
| Scope: All Seven | |
| Basis: The NRC's revised inspection program includes three parts: baseline inspections; generic safety issues and special inspections; and supplemental inspections performed as a result of risk significant performance issues. The inspection program is designed to apply NRC inspection assets in an increasing manner when risk significant performance issues are identified, either by inspection findings evaluated using the significance determination process (SDP) or when performance indicator thresholds are exceeded. Accordingly, following the identification of an inspection finding categorized as risk significant (i.e., White, Yellow, or Red) via the SDP, or when a performance indicator exceeds the "licensee response band" threshold, the NRC regional office will perform supplemental inspection(s). The scope and breadth of these inspections will be based upon the guidance provided in the NRC's assessment "Action Matrix" and the Supplemental Inspection Table (included in 2515 Appendix B). The supplemental inspection program is designed to support the NRC's goals of maintaining safety, enhancing, improving the effectiveness and efficiency of the regulatory process, and reducing unnecessary regulatory burden. | |
| Significant Changes in Scope or Basis:<br><br>September 2000 - revised to include newly issues IP 62708, "Motor-Operated Valve Capability" and to delete IP 50001, "Steam Generator Replacement Inspection." IP 50001 has been moved to IMC 2515, Appendix C.<br><br>March 2001 - revised to include newly issued IP 62709, "Configuration Risk Assessment and Risk Management Process."<br><br>January 2002 - revised to include new Inspection Procedure 62710, "Power-Operated Gate Valve Pressure Locking and Thermal Binding." | |

Figure 41 Supplemental Inspection Program Basis Summary Sheet (IMC 2515, Appendix B)

| Basis Summary Sheet | |
|---|---|
| Title: Special and Infrequently Performed Inspections | Procedure Number: IMC 2515, Appendix C |
| Scope: Expected but infrequent conditions that are outside of the ROP but warrant NRC oversight. | |
| Basis: The ROP was based on maintaining safety during normal, routine operational conditions, including regularly scheduled outages. Nonroutine, non-normal conditions that can have an affect on plant conditions or performance are overseen on an *ad hoc* basis after approval by the regional administrator. | |
| Significant Changes in Scope or Basis:<br>April 2000 - Initial issuance of appendix C for ROP.<br><br>September 2000 - Added three IPs that were part of the previous program and are expected to be used infrequently in the current program: 50001, steam generator replacement; 92050, QA for extended construction delays; and 36100, Part 21 inspections at nuclear power reactors.<br><br>March 2001 - Added IP 60853, on-site ISFSI construction. This was added to Appendix C to assure it's scheduled should the need arise before IMC 2690 is revised.<br><br>October 2002 - revised to list Independent Spent Fuel Storage (ISFSI) Installation inspection procedures that are funded for NRR inspections at operating reactor sites.<br><br>December 2002 - revised to include addition of 71003, ÃPost Approval Site Inspection for License Renewal@<br><br>February 2003 - revised to include IP 71007, "Reactor Vessel Head Replacement Inspection."<br><br>May 2004 - revised to include Inspection Procedure for inspecting Independent Spent Fuel Storage Installations (ISFSIs) at operating plants as well as to add Inspection Procedures 71004, "Power Uprate," and 71005, "Inspector Review of Licensing-Related Information." | |

Figure 42 Special and Infrequently Performed Inspections Basis Summary Sheet (IMC 2515, Appendix C)

| Basis Summary Sheet | |
|---|---|
| Title: Plant Status | Procedure Number: IMC 2515, Appendix D |
| Scope: Periodic tours of areas of the plant important to safety and observation of planning and status meetings. | |
| Basis: An important responsibility of the resident inspectors is to be aware of plant conditions and activities. Plant status provides the mechanism for residents to tour areas of their facilities and observe meetings that would otherwise be limited under the routine baseline inspection program. Although the baseline inspection program is planned, the resident's portion is highly dependent on day-to-day activities in the plant. Plant status, therefore, allows the residents to determine what is happening in the plant to better plan which inspections are most appropriate.<br><br>The plant status activities were direct inspection under the previous program through IP 71750, "Plant Operations." Plant status was changed from direct inspection effort to other direct effort in the ROP because it more closely relates to inspection preparation than actual inspection.<br><br>Plant status is also related to performance indicator verification. Because the resident inspectors will be frequently touring various areas of the plant, it is more efficient to have the residents periodically check certain parameters (such as locked high radiation barriers) during plant status tours than to send an inspector into the plant for just that one purpose. | |
| Significant Changes in Scope or Basis:<br><br>April 2000 - Initial issuance of Appendix D.<br><br>September 2003 - Revised to provide guidance to an inspector on the requirement to inform the Materials and Chemical Engineering Branch, NRR, of steam generator tube leaks of greater than 3 gallons per day.<br><br>May 2004 - Revised to provide guidance to ensure that the licensee properly monitors for RCS pressure boundary leakage or potentially unidentified leakage exceeding technical specifications limits. Additional guidance was provided to monitor licensee's actions when the licensee is operating within multiple or repetitive, or unplanned TS action statement entries and to review licensee's corrective action entry summary reports.<br><br>January 2005 - (Change Notice 05-003) IMC 2515, App. D, has been revised to require inspectors to monitor and trend RCS leakage indications. The change requires inspectors to review licensee procedures and action plans to identify sources of RCS unidentified leakage. In addition, guidance and techniques necessary for assessing potential adverse trends and action levels in response to increasing levels of RCS unidentified leakage have been provided as an attachment to this Appendix. | |

Figure 43 Plant Status Basis Summary Sheet (IMC 2515, Appendix D)

| Basis Summary Sheet | |
|---|---|
| Title: Inspection For One Or Two White Inputs In a Strategic Performance Area | Procedure Number: IP 95001 |
| Scope: This procedure provides the supplemental response for one or two White inputs in a strategic performance area. | |
| Basis: In order to provide for adequate protection of public health and safety, once a risk significant performance issue is identified, the NRC needs to ensure that licensees take actions to identify the causes of the performance issue and preclude repetition. The most effective and efficient way for the NRC to accomplish this objective is allow the licensee the opportunity to perform their own evaluation of the performance issue, and then perform a review of the licensee's evaluation. The inspection requirements contained in this procedure represent a comprehensive set of attributes related to problem identification, root cause analysis, and establishment of corrective actions. In order to ensure that the causes of the performance issue are identified and that effective corrective actions are taken to prevent recurrence, it is expected that the licensee's evaluation will generally need to address each of the inspection requirements; however, the depth of the licensee's analysis may vary depending on the significance and complexity of the issue(s). While the inspection requirements do not necessarily represent NRC requirements for the licensee, significant weaknesses in the licensee's evaluation may require that the NRC conduct additional inspections to acquire the information independently. The inspection requirements should be independent of the specific root cause methodology chosen by the licensee. | |
| Significant Changes in Scope or Basis:<br><br>June 2003 - revised to clarify guidance on extent of condition review and add guidance for evaluating whether credit should be given for "old design issues." | |

Figure 44 Inspection For One Or Two White Inputs In a Strategic Performance Area Basis Summary Sheet (IP 95001)

| Basis Summary Sheet | |
|---|---|
| Title: Inspection For One Degraded Cornerstone Or Any Three White Inputs In a Strategic Performance Area | Procedure Number: IP 95002 |

Scope: This procedure provides the supplemental response for one degraded cornerstone or three White inputs in a strategic performance area. The inspection requirements are generally applicable for single inspection findings, multiple inspection findings, and for performance issues reported by PIs that might represent more than one independent event (e.g. multiple scrams). The scope of this inspection should include all white or yellow performance issues (inspection findings or PIs) in the associated degraded cornerstone or strategic performance area. For example, if this procedure is being performed due to a yellow PI in the mitigating systems cornerstone, the inspection scope should also include any white PIs or inspection findings in that cornerstone. If the procedure is being performed due to three white PIs in the reactor safety strategic performance area, the inspection scope should include all white PIs in the reactor safety strategic performance area.

In the case where a performance indicator is associated with multiple events or occurrences, or for evaluations of multiple performance issues, it is expected that the licensee's evaluation would address each of the events or occurrences collectively, as well as individually. In those instances where the licensee's evaluation was previously reviewed as part of Inspection Procedure 95001, a re-review of the evaluation during this procedure is not required; however, a review of the licensee's collective evaluation for multiple performance issues would generally need to be performed.

Basis: The inspection requirements contained in this supplemental inspection procedure relate to the minimum set of information that the NRC will generally need to acquire in order to assure that the causes of risk significant performance issues are identified and that appropriate corrective actions are taken to prevent recurrence. While the inspection requirements are generally written to address individual performance issues, the procedure may also be utilized to assess the adequacy of licensee's evaluations associated with multiple performance issues. While these inspection requirements do not necessarily represent NRC requirements for the licensee, significant weaknesses in the licensee's evaluation may require that the NRC conduct additional inspections to acquire the information independently. It is recognized that the depth of the licensee's evaluation may vary depending on the significance and complexity of the issues. In some cases, the answers to specific inspection requirements will be self-evident with little additional review or analysis required by the inspectors.

This procedure also requires an independent NRC inspection to inspect the adequacy of the licensee's extent of condition determination. In order to accomplish this objective, the inspection team leader should develop a customized inspection plan using the applicable portions of the inspection procedure(s) listed in Appendix B to Inspection Manual Chapter 2515. The objective should be to independently sample performance, as necessary to provide assurance that the licensee's evaluation regarding extent of condition is sufficiently comprehensive. The intent is not to re-perform the licensee's evaluation, but is to assess the validity of the licensee's evaluation by independently sampling performance within the key attributes of the cornerstone(s) that are related to the subject performance issue.

Significant Changes in Scope or Basis:

March 2001 - revised to provide additional guidance regarding the scope of the inspection when multiple issues are identified within the affected cornerstone(s). It also provides additional guidance concerning the inspection requirement to perform an independent extent

| Basis Summary Sheet | |
|---|---|
| Title: Inspection For One Degraded Cornerstone Or Any Three White Inputs In a Strategic Performance Area | Procedure Number: IP 95002 |
| of condition review.<br><br>June 2003 - revised to clarify guidance on extent of condition review and add guidance for evaluating whether credit should be given for “old design issues.” | |

Figure 45 Inspection For One Degraded Cornerstone Or Any Three White Inputs In a Strategic Performance Area Basis Summary Sheet (IP 95002)

| Basis Summary Sheet | |
|---|---|
| Title: Supplemental Inspection For Repetitive Degraded Cornerstone, Multiple Degraded Cornerstone, Multiple Yellow Inputs, Or One Red Input | Procedure Number: IP 95003 |
| Scope: This procedure provides the supplemental response for repetitive degraded cornerstones, multiple degraded cornerstones, multiple Yellow inputs, or one Red input to the Assessment Action Matrix. | |
| Basis: The intent of this procedure is to provide the NRC with supplemental information regarding licensee performance, as necessary to determine the breadth and depth of safety, organizational, and programmatic issues. As such, this procedure is more diagnostic than indicative, and includes reviews of programs and processes not inspected as part of the baseline inspection program. While the procedure does allow for focus to be applied to areas where performance issues have been previously identified, the procedure does require that some sample reviews be performed for all key attributes of the effected strategic performance areas. The rational behind this is that additional NRC assurance is required to ensure public health and safety, beyond that provided by the baseline inspection program and the performance indicators at those facilities where significant performance issues have been identified. The results of this inspection will aid the NRC in deciding whether additional regulatory actions are necessary to assure public health and safety. These additional regulatory actions could include orders, confirmatory action letters, or additional supplemental inspections, as necessary to confirm that corrective actions to the identified performance concerns have been effective. | |
| Significant Changes in Scope or Basis:<br><br>January 2002 - revised to incorporate lessons learned from the Indian Point 2 inspections, and adds a section on security, which was not included in the initial version of this procedure. IP 95003.01 (Emergency Preparedness) inspection procedure was revised to reflect lessons learned from Indian Point 2 inspections. | |

Figure 46 Supplemental Inspection For Repetitive Degraded Cornerstone, Multiple Degraded Cornerstone, Multiple Yellow Inputs, Or One Red Input Basis Summary Sheet (IP 95003)

| Basis Summary Sheet | |
|---|---|
| Title: Special Inspection | Procedure Number: IP 93812 |
| Scope: Provides implementing procedures for Special Inspection (SI) responses to operational events and degraded conditions at power reactor facilities. | |
| Basis: In accordance with Management Directive 8.3, "NRC Incident Investigation Program", significant operational power reactor events and degraded conditions meeting specific deterministic criteria are evaluated for risk based on conditional core damage probability (CCDP) in order to determine the level of investigatory response. An SI is considered where CCDP is between $10^{-4}$ and $10^{-6}$. Resources for an SI are less than for an Augmented Inspection Team (AIT) in that they are less in team size and not augmented with resources external to the region. Special Inspections were developed to provide an additional level of Agency response for those events where some level of follow-up above the baseline effort is appropriate, but the significance of the event or degraded condition does not warrant the resources of an AIT. | |
| Significant Changes in Scope or Basis:<br><br>March 2001 - revised to provide consistency with Management Directive (MD) 8.3, “NRC Incident Investigation Program,” and to provide guidance on preliminary notifications.<br><br>October 2002 - revised to provide guidance on documenting information relating to events that is in addition to that currently required by IMC 0612, “Power Reactor Inspection Reports,” such as description/chronology, risk-significance, and probable contributing causes.<br><br>July 2003 - revised to reflect revision to MD 8.3 and to delete the prohibition for Special Inspections to review licensee actions related to plant restart. | |

Figure 47 Special Inspection Basis Summary Sheet (IP 93812)

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Oversight of Operating Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns | Procedure Number: IMC 0350 |
| Scope: This manual chapter will provide regulatory oversight for NRC actions and activities when a plant has been shutdown for performance problems and/or after a significant event. This oversight will include shutdown, resolution of risk-significant issues and identification of root causes prior to restart, as well as oversight for a period of time after restart. During such time as a licensee may be under this manual chapter guidance, the normal revised oversight process is suspended. | |
| Basis: IMC 0350 was revised to incorporate a number of risk-informed insights and new ROP regulatory guidance and policy. The first area of change was to establish risk-informed criteria for entry into this IMC. The entry conditions of this IMC requires as a prerequisite that a licensee's performance be commensurate with the multiple/repetitive degraded cornerstone column of the Action Matrix, as defined by IMC 0305, "Operating Reactor Assessment Program," and/or be a result of a risk-significant plant event.<br><br>The second area to be risk-informed was to provide regulatory oversight of risk significant issues, identification of their root causes, and identification of the extent of condition related to these root causes once a licensee is under the IMC 0350 process. This approach aids the staff to focus on the risk-significant issues and their root causes, wherever they originate, while increasing the efficiency and effectiveness of the regulatory oversight by not expending resources where there is little or no risk impact.<br><br>The third major area of enhancement is establishing criteria for exiting the IMC 0350 process. The length of time of post-restart oversight may vary, depending on licensee performance and resolution of identified problems, in order to reestablish applicable reliable PIs and to allow the staff to assess licensee performance before a return to the routine oversight process is warranted. | |
| Significant Changes and Basis:<br><br>March 1990 - Inspection Manual Chapter 0350 issued to codify the EDO's directives on the actions necessary to authorize the restart of nuclear power plant that is shut down due to significant operational or management deficiencies. The IMC incorporates lessons learned from recent restart reviews and comments from a GAO report issued on June 6, 1989 entitled "NRC's Restart Actions Appear Reasonable - But Criteria Needed."<br><br>January 1993 - revised in response to the EDO memorandum of November 23, 1992, to the Commission, "Corrective Action Plan for Turkey Point Lessons Learned." The revision incorporates a comprehensive restart checklist (Appendix A) to be used in developing a plant-specific restart checklist.<br><br>September 1993 - revised in response to the July 28, 1993 memorandum, "Review of NRC's Restart Review Process," from the Office of the EDO to the Office of the Inspector General. This revision incorporates requirements for tracking and documenting the resolution of restart issues.<br><br>April 1997 - revised to incorporate objective and measurable acceptance criteria for evaluating the effectiveness of licensee's corrective action plans for restart approval and to further | |

| Basis Summary Sheet | |
|---|---|
| Inspectable Area: Oversight of Operating Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns | Procedure Number: IMC 0350 |
| emphasize the importance that the restart issues be clearly defined and communicated to the licensee.<br><br>December 1997 - revised to address new applicants for operator licenses while a plant is in an extended shutdown requiring restart approval.<br><br>March 2000 - revised to incorporate policy and guidance relating to the revised reactor oversight process (ROP).<br><br>March 2001 - IMC 0350 was revised to add clarity to the entry conditions for implementing this IMC stating that as a prerequisite, a regulatory hold would be in effect, such as a Confirmatory Action Letter or an Order, prior to implementing this manual chapter. An additional change included clarification to encourage the continued collection of PI data throughout the shutdown and implementation of the IMC 0350 process, if practical.<br><br>December 2003 - revised to provide comprehensive correlation between aspects of the ROP and the IMC 0350 process, to provide an enhanced structure to the inspection approach for IMC 0350 plants, and to incorporate other lessons learned and clarifications. | |

Figure 48 Oversight of Operating Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns Basis Summary Sheet (IMC 0350)

| Table 1 Inspectable Areas by Cornerstone | | | | | | |
|---|---|---|---|---|---|---|
| Inspectable Area | Initiating Events | Mitigating Systems | Barrier Integrity | Emergency Preparedness | Occupational Radiation Safety | Public Radiation Safety |
| Access control to radiologically significant areas | | | | | X | |
| Adverse weather protection | X | X | | | | |
| ALARA planning and controls | | | | | X | |
| Alert and notification system testing | | | | X | | |
| Drill evaluation | | | | X | | |
| Emergency response organization augmentation testing | | | | X | | |
| Emergency action level and emergency plan changes | | | | X | | |
| Equipment alignment | X | X | X | | | |
| Evaluations of changes, tests, or experiments | X | X | X | | | |
| Exercise evaluation | | | | X | | |
| Fire protection | X | X | | | | |
| Flood protection measures | X | X | | | | |
| Heat sink performance | X | X | | | | |
| Identification and resolution of problems | X | X | X | X | X | X |
| Inservice inspection activities | X | | X | | | |
| Licensed operator requalification | | X | X | | | |

Table 1 Inspectable Areas by Cornerstone (continued)

| Inspectable Area | Initiating Events | Mitigating Systems | Barrier Integrity | Emergency Preparedness | Occupational Radiation Safety | Public Radiation Safety |
|---|---|---|---|---|---|---|
| Maintenance risk assessments and emergent work control | X | X | X | | | |
| Maintenance effectiveness | X | X | X | | | |
| Operability evaluations and functionality assessments | | X | X | | | |
| Post maintenance testing | | X | X | | | |
| Plant modifications | X | X | X | | | |
| Radiation monitoring instrumentation | | | | | X | |
| Radiation worker performance | | | | | X | |
| Radioactive material processing and transportation | | | | | | X |
| Radioactive Gaseous and liquid effluent treatment and monitoring systems | | | | | | X |
| Radiological environmental monitoring program | | | | | | X |
| Refueling and outage activities | X | X | X | | | |
| Safety system design and performance capability | | X | | | | |
| Surveillance testing | | X | X | | | |

| Table 2 Other Inspection Program Elements Considered But Not Included | | | |
|---|---|---|---|
| Inspectable Area or Program Attribute | Cornerstone | Scope | Basis for Not Including in Baseline Inspection Program |
| Piping System Erosion/Corrosion | Initiating Events | Equipment performance, detecting and correcting component degradation | Reactor coolant system piping generally isn't subject to erosion/corrosion because of the materials used, water chemistry control, and the general absence of two-phase (water/steam) mixtures. Balance of plant steam piping is subject to erosion/corrosion. However, because they are balance of plant (BOP) systems, there would be little risk impact to the reactor core. The primary concern for erosion/corrosion in BOP systems is personnel safety rather than reactor safety. Additionally, significance failures would be tracked by performance indicators such as unplanned shutdowns. Mitigating systems are sometimes subject to erosion/corrosion. However, that particular aspect of a system can be reviewed under the safety system design inspection procedure. |
| Pre-Job Briefs | Initiating Events | Human performance | Covered by PI's (transients, scrams, SSU) |
| Operating Experience Review | Initiating Events Mitigating Systems | Design. Sources of experience including NRC bulletins, notices, generic letters, vendor reports, and Part 21 notifications. | Considered covered by PI's (transients, scrams, SSU) design-related inspections |
| Operator Shift Turnovers | Initiating Events Mitigating Systems | Configuration control, effectiveness of communications between operating shifts. | Covered by PI's (transients, scrams) |

| Table 2 Other Inspection Program Elements Considered But Not Included (continued) | | | |
|---|---|---|---|
| Inspectable Area or Program Attribute | Cornerstone | Scope | Basis for Not Including in Baseline Inspection Program |
| Testing of Pumps and Valves | Initiating Events Mitigating Systems | Inspection activities in this area would be focused on the effectiveness of the licensee's program for testing of pumps and valves as required by ASME Section XI. Inspection activities in this area would include a review of test procedure adequacy, testing methodology, equipment trend results and observations of selected pump performance testing, valve stroke time testing, relief valve setpoint testing, and check valve testing. | Incorporated into IP 71111.22, "Surveillance Testing" |
| Spent Fuel Cooling | Mitigating Systems | Structure, systems, and components associated with handling, and providing cooling for, spent fuel assemblies. | A separate inspection procedure for spent fuel cooling systems or fuel movement was not developed because the baseline inspection program is primarily based on the risk associated with reactor core damage when the reactor fuel is in the reactor vessel. However, the baseline inspection procedure for refueling and outage activities does include spent fuel handling and operation of spent fuel pool cooling systems. The guidance in the procedure includes verifying availability of equipment and procedures for recovery if spent fuel cooling is lost. |
| Motor-Operated Valves (MOVs) | Mitigating Systems | The NRC has been inspecting licensees' programs for assuring proper performance of MOVs through Temporary Instruction 2515/109 since 1989. The latest revision of the temporary instruction includes verifying that licensees are trending valve performance and closing | A separate inspection procedure for MOVs was not necessary since the baseline inspection program provides opportunities to inspect MOVs through several inspectable areas such as safety system |

| Table 2 Other Inspection Program Elements Considered But Not Included (continued) | | | |
|---|---|---|---|
| Inspectable Area or Program Attribute | Cornerstone | Scope | Basis for Not Including in Baseline Inspection Program |
| | | previously identified issues. | design and performance capability, permanent plant modifications, and surveillance testing. Also, the baseline inspection program places an emphasis on continual assessment of a licensees' corrective action programs, which would include problems found during the implementation of their programs for MOVs. |
| Equipment Switching and Tagging | Mitigating Systems | Equipment performance and configuration control | Covered by PIs (transients, scrams, ssu) |
| Large Containment Isolation Valve Leak Rate and Status Verification | Barrier Integrity | Inspection activities in this area would be focused on the adequacy of the licensee's testing program for large containment isolation valves that provide a direct flow path from the containment atmosphere to outside containment. At most facilities the inspection scope would be limited to the containment purge and ventilation valves and personnel access hatches. Inspection activities related to leak rate testing for most of the containment isolation valves and/or containment Integrity issues would be captured by the corrective action program inspection activities. | Incorporated into IP 71111.22, "Surveillance Testing" |
| Fuel Barrier Performance | Barrier Integrity | Inspection includes verification of operation of the licensee's capability and performance of in-plant radio-chemical analyses of the reactor coolant system (RCS). Inspection of fuel cladding radio-chemistry analysis performance will provide assurance that the first barrier against release of radioactivity to the | A performance indicator is provided for RCS activity. |

| Table 2 Other Inspection Program Elements Considered But Not Included (continued) | | | |
|---|---|---|---|
| Inspectable Area or Program Attribute | Cornerstone | Scope | Basis for Not Including in Baseline Inspection Program |
| | | environment is maintained. Failure of fuel cladding would increase the radiation dose to workers and potentially to members of the public. | |
| EP Training Program | Emergency Preparedness | Inspect training program for adequacy, changes and the knowledge level and qualifications of ERO members. Emergency Preparedness is the final barrier in the "defense in depth" NRC regulations provide for ensuring the public health and safety. The training program must ensure that ERO members are adequately prepared to perform their assigned EP duties. The ERO members must be qualified to perform their assigned duties. | Two PI's, DEP and ERO, address this area and therefore a baseline inspection is not required. |
| Radiation Worker Performance | Occupational and Public Rad Safety | The objective of this area is to verify that workers understand the radiological hazards associated with nuclear plant operation, effectively identify and control these hazards, identify and resolve adverse trends or deficiencies, and maintain proper oversight of work. | Worker performance is a cross cutting area. Since the PIs are performance based, problems in this area should result in an operational occurrence that meets the definition of a PI. |

ATTACHMENT 1

Revision History for IMC 0308 Attachment 2

| Commitment Tracking Number | Accession Number<br>Issue Date<br>Change Notice | Description of Change | Description of Training Required and Completion Date | Comment Resolution and Closed Feedback Accession Number (Pre-Decisional, Non-Public) |
|---|---|---|---|---|
| N/A | ML042100185<br>7/27/04<br>CN 04-020 | Initial Issuance | N/A | N/A |
| N/A | ML050410043<br>1/26/05 | Revised to reflect IMC / IP revisions. | N/A | N/A |
| N/A | ML052100182<br>7/28/05<br>CN 05-022 | Minor revision to Section 3 discussion on event follow-up. | N/A | N/A |
| N/A | ML062890421<br>10/16/06<br>CN 06-027 | This IMC has been revised to incorporate comments from the Commission in which the term public confidence has been change to openness | N/A | N/A |
| N/A | ML17114A050<br>01/05/18<br>CN 18-001 | This IMC is being revised to reflect changes to IMCs / IPs since last revision, and address open feedback forms. | N/A | ML17156A217<br>0308.2-1930<br>ML17178A051 |
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