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 response necessary for significant events. Plants in extended shutdowns due to performance problems are inspected and assessed by a separate inspection process because many of the PIs and much of the baseline inspection program would not be applicable for plants in extended shutdowns.

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 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 at an acceptable level. 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 requirements in regulations). 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 to determine their safety significance.

- The process for planning inspections will be based on a 12-month cycle.

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.

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 being 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 Figures 3 through 11 of the main body of this document. Therefore, the baseline inspection program requires that most inspectable areas be reviewed at each nuclear power plant each year. Several 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 B-1 through B-38 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 of 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.

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 B-39 through B-47 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 B-39 and B-40 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, root cause 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) root 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 three parts. The first part is conducted during inspection of the associated inspectable areas within each cornerstone. The second part is a sample of three to six issues that are selected annually for more in-depth review. The third 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 41 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 42 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 47 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, "Inspection For One or Two White Inputs in a Strategic Performance Area," 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, "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 B-48 through B-50 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 51 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 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. Additional detail on the scope and basis for the IMC 0350 process can be found in Figure 52.

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 that relate to important cross-cutting areas but may not rise to the level for inclusion in assessing a plant's performance in the new assessment program.

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.

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.

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.

Figure 1 IP 71111.01 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Evaluations of Changes, Tests, or Experiments	
Cornerstone(s): Initiating Events, Mitigating Systems, Barrier Integrity	**Inspection Procedure:** IP 71111.02
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. 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: April 2000 - Requirements for reviewing license changes in accordance with 10 CFR 50.54 were deleted from the inspection scope and basis of this inspection procedure, and were incorporated into IP 71114.04.	

Figure 2 IP 71111.02 Basis Summary Sheet

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 IP 71111.03 Basis Summary Sheet

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. 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: None	

Figure 4 IP 71111.04 Basis Summary Sheet

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.	

Figure 5 IP 71111.05 Basis Summary Sheet

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.

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.

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: None

Figure 6 IP 71111.06 Basis Summary Sheet

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.

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.

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.

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.

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:

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 IP 71111.07 Basis Summary Sheet

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.

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.

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:

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.

Figure 8 IP 71111.08 Basis Summary Sheet

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 IP 71111.09 Basis Summary Sheet

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 IP 71111.10 Basis Summary Sheet

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. 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. 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: 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. 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.	

Figure 11 IP 71111.11 Basis Summary Sheet

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.

Figure 12 IP 71111.12 Basis Summary Sheet

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.

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. When safety systems are not available or system redundancy is degraded due to maintenance activities, that unplanned unavailability PI will provide some information on the adequacy of configuration control. Appropriate identification, prioritization, planning, scheduling, and completion of risk significant work is essential to safe operation. Risk management minimizes risk-significant configurations and initiating events and maximizes availability of mitigating systems and barriers to radiological releases. The inspection activity in this area would focus on evaluating the adequacy of licensee's risk assessment and risk management of plant configuration changes. Inspection activities also verify whether the licensee has taken the necessary steps to demonstrate that emergent activities are adequately planned and controlled to avoid initiating events and to ensure the continued reliability, availability and functional capability of SSCs. These inspection activities would include a review of related troubleshooting, work planning, establishment of plant conditions, tagging, conformance with Technical Specifications and restoration of equipment to service, with an emphasis on verification of plant configuration.

One specific area that should be included in inspection of this area is the control of risk significant work in the switchyard. A large percentage of loss-of-offsite power events occurred when either some major electrical power source was out of service prior to the event and/or some major electrical power source failed during the event. It is important that work occurring in the switchyard be well controlled to prevent an unplanned loss of a power source due to maintenance errors. Also, the simultaneous removal of multiple electrical power sources from service should be avoided, particularly during shutdown conditions.

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.

Figure 13 IP 71111.13 Basis Summary Sheet

Basis Summary Sheet
Inspectable Area: Maintenance Rule Risk Assessments and Emergent Work Control
Significant Changes in Scope or Basis: April 2000 - The emergent work inspection requirements and guidance were added to the procedure since this IP covered inspection of configuration control issues. 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.

Figure 13 IP 71111.13 Basis Summary Sheet (continued)

Basis Summary Sheet	
Inspectable Area: Personnel Performance During Nonroutine Plant Evolutions	
Cornerstone(s): Initiating Events, Mitigating Systems, and Barrier Integrity	**Inspection Procedure:** IP 71111.14
Scope: The inspection activities will be used to evaluate operator and equipment performance for other than normal and routine operations. This inspection activity will provide a vital tie between operator performance observed under simulated conditions and those observed during non-routine plant operations. This activity will also provide a snapshot of plant and equipment performance during transient conditions.	
Basis: This inspection primarily supports the Mitigating Systems and Barrier Integrity cornerstones by providing assessment of operator performance during transient and off-normal operations. Poor operator performance could also affect the Initiating Events cornerstone. In addition to providing observations of non-routine plant operations, inspections in this area provide increased opportunities to observe more significant plant transients and to evaluate operator and equipment performance during those non-simulated transient conditions. Operator performance provides a vital link in mitigating the consequences of improper or unforseen equipment performance. Degrading operator performance results in increased risk due to its impact on human factors terms, assumed operator recovery rates, and personnel induced common cause errors. Probabilistic risk assessments have shown that human errors can be very significant contributors to risk, in particular during recovery from accident events.	
Performance Indicators: Operator performance under abnormal plant operating conditions cannot be sufficiently covered by a performance indicator because the PIs of transients and trips do not include near-miss events.	
Significant Changes in Scope or Basis: None	

Figure 14 IP 71111.14 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Operability Evaluations	
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 operable and fully capable of performing their design functions based on written operability evaluations. Initial reviews of the operability 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 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 are fully functional to perform their design function. Improperly evaluated degraded and/or non-conforming conditions may result in continued operation with an SSC that is not capable of performing its design function. 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. 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 design function which would result in operation of the plant outside of its design and license bases. The potential effects on safe operation could include the loss of redundancy within a safety system, the loss of safety 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: None	

Figure 15 IP 71111.15 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Operator Workarounds	
Cornerstone(s): Mitigating Systems	**Inspection Procedure:** IP 71111.16
Scope: Inspection activities in this area would focus on plant and control room deficiencies that have the potential to affect performance in conducting routine and non-routine evolutions. Detailed inspection activities would be limited to those risk significant deficiencies that could compromise equipment and personnel mitigation strategies. A review of all deficiencies in a mitigating system would also be conducted to determine if their synergistic affects were risk significant. The inspection would focus on those deficiencies that are not included in the temporary modification process and would require operator actions that are in addition to those assumed in the initial design.	
Basis: Operator workarounds can have an adverse effect on the functional capability of a system in that the system may not be capable of performing its design function without operator intervention. An excessive number of operator workarounds or those requiring complex operator actions reduce the effectiveness of the operations staff in responding to transient conditions and will increase the chance of operator errors. Probabilistic risk analyses have identified human errors as significant contributors to risk. This inspectable area verifies aspects of the Mitigating System Cornerstone for which there are no indicators to measure performance.	
Performance Indicators: There are no performance indicators that have been established that can provide results related to the adequacy of the licensee's process for controlling operator workarounds. Performance indicators can not assess the significance of operator work-around items.	
Significant Changes in Scope or Basis: December 2001 - The procedure has been revised to highlight the difference between all operator workarounds and those that are deemed risk significant. The inspector will review a sample of risk significant operator workarounds to determine if singularly any of them are risk significant, and he will also review all operator workarounds for a specific mitigating system so as to ascertain whether their synergistic aspects could produce a risk significant concern.	

Figure 16 IP 71111.16 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Permanent Plant Modifications	
Cornerstone(s): Mitigating Systems and Barrier Integrity	**Inspection Procedure:** IP 71111.17
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.	
Basis: Inspection of permanent plant modifications provides monitoring of the licensee's performance to ensure that the design bases for risk-significant SSCs have been maintained and that the changes have not adversely affected the licensing and design bases and safety functions of the SSCs. Plant modifications may introduce changes to the assumptions and models used in the plant specific probabilistic risk assessment (PRA). Modifications to one system may affect the design bases and functioning of other interfacing systems. Also, similar modifications to several systems could introduce potential for common cause failures that affect plant risk. Industry experience has shown that modifications to risk-significant SSCs can adversely affect their availability, reliability or functional capability. The baseline Inspection of permanent modifications should focus on: (1) compliance with regulations, (2) consistency with defense-in-depth philosophy, (3) maintaining sufficient safety margins, and (4) acceptability of the effects on risk. Verification of post-modification testing to confirm that the objectives of the modification are met and verification that the system is restored to the required configuration after completion of the modification are important. Design requirements that cannot be verified by testing of the modification, such as seismic or environmental qualifications should also be reviewed.	
Performance Indicators: No performance indicators have been established that can provide results related to the adequacy of permanent modifications.	
Significant Changes in Scope or Basis: None	

Figure 17 IP 71111.17 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Reserved	
Cornerstone(s):	**Inspection Procedure:** IP 71111.18
Scope: .	
Basis:	
Performance Indicators:	
Significant Changes in Scope or Basis:	

Figure 18 IP 71111.18 Basis Summary Sheet

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. 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: None	

Figure 19 IP 71111.19 Basis Summary Sheet

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: None	

Figure 20 IP 71111.20 Basis Summary Sheet

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. 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: None	

Figure 21 IP 71111.21 Basis Summary Sheet

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. 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: April 2000 - Procedure incorporated requirements and guidance to review licensee's inservice testing activities, containment isolation valve and ice condenser system surveillances.	

Figure 22 IP 71111.22 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Temporary Plant Modifications	
Cornerstone(s): Mitigating Systems and Barrier Integrity	**Inspection Procedure:** IP 71111.23
Scope: 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: Inspection of this area supports the design and design control attributes of the Mitigating Systems and Barrier Integrity cornerstones. Inspection of temporary plant modifications provides monitoring of the licensee's performance in ensuring that the design bases for risk-significant systems, SSCs have been maintained and that the changes have not adversely affected the safety functions of the SSCs. Temporary modifications may introduce change to the assumptions and models used in the plant specific probabilistic risk assessment. A temporary change to one system may affect the design bases and safety functions of other interfacing safety systems. An increase in the likelihood of the occurrence of an initiating event could result from a temporary change. Also, similar temporary modifications to several systems could introduce the potential for common cause failures that affect plant risk. Temporary modifications to risk-significant SSCs may adversely affect their availability, reliability or functional capability. A temporary modification may result in a departure from the design basis and system success criteria. Temporary or unrecognized risk changes due to the modification may evolve into high risk configurations. This inspectable area verifies aspects of the associated cornerstones for which there are no indicators to measure performance. Industry experience has shown that temporary modifications to risk-significant SSCs can adversely affect their availability, reliability or functional capability. Verification that all safety functions of the system are restored after completion of the temporary modification is important.	
Performance Indicators: No performance indicators have been established that can provide results related to the adequacy of temporary modifications.	
Significant Changes in Scope or Basis: None	

Figure 23 IP 71111.23 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Biennial Exercise and Drill Inspection	
Cornerstone(s): Emergency Preparedness	**Inspection Procedure:** IP 71114.01 and IP 71114.06

Scope: These inspection areas are an evaluation of licensee's critique of performance during the conduct of drills, exercises and appropriate training evolutions. This verifies the licensee's ability to identify unacceptable performance in the implementation of the emergency plan. It verifies that the critique program used to develop the success rate reported by the DEP PI represent the actual success rate of risk significant planning standard performance. The inspection ensures the efficacy and veracity of the licensee critique program.

Basis: This inspection area supports the EP cornerstone through the 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 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.

If the ERO consistently performs these activities in a timely and accurate manner, it indicates that the EP program is operating within the licensee response band where NRC can allow licensees to address weaknesses with oversight through a risk informed inspection program.

Simulated emergency events (e.g., drills) that are identified in advance of performance as opportunities for the DEP PI would be observed. Inspection of drills and training evolutions (71114.06) could be unannounced, but inspection of the biennial exercise (71114.01) could not. The inspector would observe licensee assessment of at least the RSPS activities and ensure that the critique program is identifying successes and failures. Other areas of drill performance and critique would be observed to the extent that inspection resources allow. IP 71114, Section 3 provides priorities for the deployment of inspection resources beyond the RSPS.

Performance Indicators: The DEP PI has been developed to indicate performance in the most risk significant areas of EP (RSPS). However, the statistics used to value the DEP PI are based on licensee critique of RSPS performance in drills, exercises and appropriate training evolutions. These inspections verify the efficacy of the licensee critique program.

Figure 24 IP 71114.01 and IP 71114.06 Basis Summary Sheet

Basis Summary Sheet
Inspectable Area: Biennial Exercise and Drill Inspection
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 documentation and staff for discussion to NRC detracts from the primary focus. The review of weakness correction was moved to 71114.05.

Figure 24 IP 71114.01 and IP 71114.06 Basis Summary Sheet (continued)

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 activities for the Alert and Notification System (ANS) in order to assess licensee performance.	
Basis: This inspection area supports the Emergency Preparedness (EP) cornerstone through the Facilities and Equipment key attribute. 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. An ANS with a high rate of reliability increases the assurance public health and safety can be protected during an emergency. If an EP program consistently ensures that the ANS is in a high state of readiness it indicates that the EP program is operating within the licensee response band where NRC can allow licensees to address weaknesses with oversight through a risk informed inspection program. The ANS Reliability PI measures the reliability of the ANS. The value of the PI is based on the results of the testing program. This inspection addresses the testing program itself to ensure it meets national standards (and/or commitments) for the testing of the ANS.	
Performance Indicators: A PI, ANS reliability, addresses performance in this area. However, for the statistics of the PI to be valid, the testing program must be conducted in accordance with guidance. The inspection verifies testing program compliance.	
Significant Changes in Scope or Basis: None	

Figure 25 IP 71114.02 Basis Summary Sheet

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 review of licensee processes to augment the Emergency Response Organization (ERO) during emergencies. 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 activation goals. Licensee ability to identify and disposition augmentation problems 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. The licensee system to augment the on-shift staff with ERO members is an important process in implementing the Emergency Plan. This system involves the notification of individual ERO members, training of ERO members in its use, verification that it can support facility activation goals and testing to ensure function.	
Performance Indicators: No PIs were established that cover this area.	
Significant Changes in Scope or Basis: None	

Figure 26 IP 71114.03 Basis Summary Sheet

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. 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 that NRC approve EALs. 10 CFR 50.54(q) states that licensees may change emergency plans so long as the change does not decrease the effectiveness of the Plan. In accordance with past practice, NRC allows licensees to make EAL changes that are not a decrease in effectiveness without prior NRC approval. However, the regulations require NRC approval of all such changes. This inspection is the method for NRC review and approval of all EAL changes. Plan changes do not require NRC approval so long as they do not decrease the effectiveness of the Plan. This inspection provides for review of a sampling of licensee plan changes annually to ensure that licensee processes are ensuring that changes do not decrease the plan's effectiveness.	
Performance Indicators: No PIs were established that cover this area.	
Significant Changes in Scope or Basis: 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.	

Figure 27 IP 71114.04 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Correction of Emergency Preparedness Weaknesses and Deficiencies	
Cornerstone(s): Emergency Preparedness	**Inspection Procedure:** IP 71114.05
Scope: Evaluate licensee efforts to correct EP related weaknesses and deficiencies	
Basis: The licensee critique program (and other self-assessment processes) should identify ERO performance and other problems that detract from Plan implementation. The identification of repeat items and trends and the disposition of corrective actions is inspected. The ability to identify and resolve problems is integral to the efficacy of an EP program. The ability to identify problems is inspected under 71114.01 & .06 as it relates to the conduct of drills and exercises. This inspection addresses licensee ability to correct identified weaknesses in a timely manner. The inspection is meant to include all licensee efforts that assess the EP program or the performance of the ERO such as: • self assessment reports including all reports of actual events and missed classification of actual events, • biennial exercise and drill critiques, • audits conducted under 10 CFR 50.54(t), and • assessments performed by the Quality Assurance organization.	
Performance Indicators: No PI's were established that cover this area.	
Significant Changes in Scope or Basis: None	

Figure 28 IP 71114.05 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Access Control to Radiologically Significant Areas	
Cornerstone(s): Occupational Radiation Safety	**Inspection Procedure:** IP 71121.01
Scope: This procedure will verify that the licensee has implemented effective Radiation Protection (RP) barrier integrity to prevent an uncontrolled access to an airborne, high radiation area (HRA) or very high radiation area (VHRA) that could potentially result in an exposure in excess of regulatory limits. RP barrier integrity includes: identification and control of the hazard, administrative controls (RWPs, planning, procedures), physical barrier integrity or engineered controls (e.g., barrier integrity ropes, locked doors, shielding, or ventilation systems), radiological surveys and monitoring (e.g., RP technician coverage, personnel alarming dosimeter, or remote monitoring or surveillance), and radiation worker training.	
Basis: Inspection in this area supports the plant facilities attribute of the Occupational Radiation Safety cornerstone. This inspection will review the licensee's performance in instituting the physical and administrative controls defined in Subparts G, H, I, and J of 10 CFR Part 20, applicable technical specifications (TS), and licensee procedures for airborne areas, HRAs and VHRAs, and worker adherence to these controls. Radiological risk (i.e., exposure) to a worker must be within the occupational exposure limits defined in 10 CFR Part 20 and ALARA to minimize the potential for health effects. Collectively, the access controls provide a "defense-in-depth" against a significant exposure. Industry experience has identified frequent occurrences where the failure of multiple barrier integrity resulted in an uncontrolled entry and, in some cases, a significant exposure.	
Performance Indicators: The established performance indicator (PI) does not address airborne areas or HRAs with dose rates <1000 mrem/hr or highly contaminated areas having the potential for an exposure in excess of regulatory limits. Therefore, these areas are included in the baseline inspection.	
Significant Changes in Scope or Basis: None	

Figure 29 IP 71121.01 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: ALARA Planning and Controls	
Cornerstone(s): Occupational Radiation Safety	**Inspection Procedure:** IP 71121.02

Scope: This area will verify that the licensee maintains occupational exposure as low as reasonably achievable (ALARA) by properly planning and controlling radiologically significant work activities. Controls, as stated here, refer to those physical (e.g., locked doors, barrier integrity ropes, shielding, engineering controls) and administrative (e.g., surveys, planning, procedures, training, monitoring) barrier integrity that, in the aggregate, serve to mitigate exposure.

The focus is whether reasonable goals were established for radiologically significant work which consider previous licensee performance and industry experience, and whether the licensee's subsequent performance met those goals. Emphasis should be placed on those jobs having a high individual and/or collective dose, being performed in an area of higher radiological risk or are of concern because of industry or licensee experience (such as spent fuel pool diving). This may include observing selected activities to verify the assumptions underlying these goals and that the appropriate controls were implemented. The inspection should also review licensee assessments of the ALARA program to determine whether adequate administrative controls, management oversight, and exposure controls (including source term reduction) were taken.

Specific attention should be given to Planned Special Exposures and exposures to Declared Pregnant Workers, because of the inherent risk and public interest.

Basis: Inspection in this area supports the program/process attribute of the Occupational Radiation Safety cornerstone.

This inspection will review whether the licensee meets the requirements of Subpart B to 10 CFR Part 20, which requires that a Radiation Protection program, including procedures and engineering controls, be instituted to maintain occupational dose ALARA. As discussed in the Statement of Considerations to the 1991 rule change (FR Vol. 56, No. 98, page 23367), compliance with this requirement is judged on whether the licensee has incorporated measures to track and, if necessary, to reduce exposures and not whether exposures represent an absolute minimum.

Radiological risk (i.e., exposure) to a worker should be maintained within the occupational exposure limits defined in 10 CFR Part 20 and ALARA to minimize the potential for health effects. Effective ALARA planning will ensure that adequate physical and administrative controls are in place to mitigate exposure during radiologically significant work. Industry's experience includes frequent events where problems in this area have resulted in unanticipated exposure or a loss of control of the work activity. Specific attention should be given to Planned Special Exposures, exposures to Declared Pregnant Workers, and to activities that challenge the maintenance of occupational exposure control and ALARA, such as outage and refueling planning and preparation, emergent work activities, and radiological events.

Performance Indicators: There is no performance indicator established that covers this area. Assessment of the ALARA program effectiveness is site-specific and highly dependent upon operational history, work scope, and worker experience.

Significant Changes in Scope or Basis: None

Figure 30 IP 71121.02 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Radiation Monitoring Instrumentation	
Cornerstone(s): Occupational Radiation Safety	**Inspection Procedure:** IP 71121.03
Scope: Inspection of this area should ensure that criticality monitors, area radiation monitors, continuous air monitors and applicable Radiation Monitoring System monitors are reliable and accurate in areas where activities could result in transient HRAs, VHRAs or airborne areas. This inspection will also include the containment dome monitors (because of their importance in accident analysis and classification), portable instrumentation used to assess radiologically significant areas or activities (such as underwater meters used during diving), and bioassay equipment (such as whole body counters). However, the inspection will not include those monitors that a licensee has included under their Maintenance Rule program.	
Basis: This inspection will verify that these monitors are calibrated and maintained (including verifying alarm setpoints) as required by 10 CFR Part 20 or a licensee's technical specifications and procedures. Radiological risk (i.e., exposure) to a worker should be maintained within the occupational exposure limits defined in 10 CFR Part 20 and ALARA to minimize the potential for health effects. These monitors identify changing radiological conditions to workers such that actions to prevent an overexposure can be taken. Industry has experienced several events where these monitors were the primary indication that radiological conditions had significantly changed as a result of planned or unplanned activities.	
Performance Indicators: None of the established PIs cover this area. Monitor locations are site specific and assessments of their reliability and accuracy will require baseline inspection.	
Significant Changes in Scope or Basis: None	

Figure 31 IP 71121.03 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Gaseous and Liquid Effluent Treatment Systems	
Cornerstone(s): Public Radiation Safety	**Inspection Procedure:** IP 71122.01

Scope: This area will verify that gaseous and liquid radioactive effluent treatment systems are maintained such that radiological releases are properly mitigated, monitored and assessed. The focus is to ensure that radiological effluent releases are controlled in accordance with license conditions and regulatory limits, that system modifications are properly performed, and that radiological effluent and meteorological monitors are accurate and reliable. Overall system operation (including administrative controls) will be assessed by reviewing licensee problem and resolution assessments, the Annual Radiological Environmental Monitoring Report and the Annual Radiological Effluent Release Report.

The baseline program consists of performing in-office reviews of the Annual Radiological Effluent Release Report to verify that the program is being implemented as described in the licensee's Offsite Dose Calculation Manual (ODCM). Additional areas of review (on-site) include calibration of the gaseous and liquid radiological effluent monitors, including any modifications to the system, the calibration and operation of the site meteorological monitoring system, and modifications to the radioactive waste treatment system. The baseline inspection also includes a walk down of the gaseous and liquid radioactive processing and monitoring systems to observe routine activities and to verify that previously identified deficiencies are being corrected.

Basis: Inspection in this area supports the plant facilities/equipment and instrumentation and program/process attributes of the Public Exposure cornerstone.

This inspection will verify that gaseous and liquid radioactive effluent processing systems are maintained as required by General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50, Radiological Effluent Technical Specifications (RETS) and the ODCM.

The dose from radioactive effluents is required to be maintained within the limits of 10 CFR Part 20 and 40 CFR Part 190, as well as being As Low As is Reasonably Achievable (ALARA) to minimize the potential for health effects. Doses below the design objectives contained in Appendix I to 10 CFR Part 50 are considered ALARA by the NRC. Proper operation of the radioactive effluent treatment system and release point monitors will ensure an adequate defense-in-depth against an unmonitored, unanticipated release of radioactivity to the environment.

The NRC has determined that an independent assessment of licensee performance in this area is necessary to ensure that adequate protection of the public health and safety is maintained.

Performance Indicators: The performance indicators (PI) for this area adequately address most aspects of the program/process and human performance attributes. The PI is based on actual calculated radiation doses to members of the public from the routine release of gaseous and liquid radioactive effluents. Specific radiation dose criteria have been established, which if exceeded are an indication of potential degraded licensee performance. Incidents that will be tracked as a PI include radiological effluent releases which result in a calculated dose to a member of the public in excess of the PI value.

The PIs do not address accident releases, system modifications, and meteorological and effluent monitor operability. The PIs do not address meteorological and effluent monitor calibration and setpoint verification, thus a selective inspection of calibration and setpoint records is necessary to verify the integrity of the PIs.

Significant Changes in Scope or Basis: None

Figure 32 IP 71122.01 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Radioactive Material Processing and Transportation	
Cornerstone(s): Public Radiation Safety	**Inspection Procedure:** IP 71122.02

Scope: Inspection of this area will verify that appropriate controls are instituted for the processing and transportation of radioactive material to a licensed disposal facility or other licensed recipient. The focus of the inspection is to review the administrative and physical controls for the processing and transportation of radioactive material (i.e., Class A, B, C, and irradiated fuel shipments) to ensure that radiation exposure to radiation workers and members of the public are within regulatory limits. The inspection also includes a walkdown of the radioactive waste processing systems to verify that the systems are in good material condition. During the inspection, a review and observation is performed on a sample of selected shipping activities having risk-significance (such as Type B, C, or irradiated fuel shipments), including reviewing associated transportation records, to provide independent validation of the transportation program. Emphasis is also given to the 10 CFR Part 61 waste characterization and stability requirements (III.A.3 and III.C.5 of Subpart G to 10 CFR Part 20). The inspection uses licensee documentation and assessments for the review of lesser shipping activities (i.e., Type A), administrative controls, worker training and qualifications, and to verify that changes to the U.S. Department of Transportation (DOT) or NRC transportation requirements were addressed. All transportation events reported to the Commission or to the licensee from a State regulatory agency are also reviewed.

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.

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. 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: None

Figure 33 IP 71122.02 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program	
Cornerstone(s): Public Radiation Safety	**Inspection Procedure:** IP 71122.03

Scope: Inspection of the REMP is to ensure that the licensee's program reasonably measures the effects of radioactive releases to the environment. The focus of the inspection is on the licensee's program to collect environmental samples, process the samples (i.e., analyze for the type and amount of radioactive material), and trend the data to determine if there is an environmental impact from the operation of the plant.

The inspection of the REMP consists of an in-office review of the licensee's Annual Radiological Environmental Monitoring Report to verify that the REMP was implemented as required by the Technical Specifications and the ODCM. The review includes verifying that the environmental sampling is representative of the radioactive effluent release pathways and that any problems (e.g., missed samples and/or inoperable sampling/analyses equipment) are being addressed. During the on-site portion of the inspection, the inspector will perform a walk-down of the licensee's sampling stations, observe environmental sampling techniques and analyses techniques, and review the calibration and maintenance of the radiation detection instrumentation used for sample analysis (if the analysis is performed on-site) for regulatory compliance.

Inspection of the licensee's Radiological Material Control program is to verify that licensed radioactive material is controlled in accordance with the requirements of 10 CFR Part 20. The focus is to ensure that the licensee has a program, procedures, and equipment to survey potentially contaminated material and equipment to ensure that licensed radioactive material is not inadvertently released into the public area. The inspection includes direct observation of control points the licensee uses to survey and release material and equipment.

Basis: The REMP is required by Criterion 64 of Appendix A to 10 CFR Part 50. The REMP supplements the radiological effluent monitoring program by verifying that any measurable concentrations of licensed radioactive material and levels of radiation in the environment are in agreement with the values calculated by the licensee's radiological effluent monitoring program. The licensee is required to implement the REMP in accordance with its Technical Specifications and ODCM. 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.

The inspection of the Radiological Material Control program is to ensure that licensed radioactive material is controlled in accordance with 10 CFR Part 20. 10 CFR Part 20, Subpart K - Waste Disposal contains the acceptable ways to dispose of licensed radioactive material. Additionally, 10 CFR Part 20, Subpart F - Survey and Monitoring contains the requirement that a radiation survey must be performed to assess the potential radiological hazard of licensed radioactive material. In combination, these requirements form the basis of NRC's inspection program for radioactive material control programs.

Performance Indicators: There are no Performance Indicators for these areas.

Significant Changes in Scope or Basis: None

Figure 34 IP 71122.03 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Access Authorization (Personnel Screening, Fitness-for-duty and Behavior Observation)	
Cornerstone(s): Physical Protection	**Inspection Procedure:** IP 71130.01

Scope: This area will verify that the licensee is properly implementing their personnel screening and fitness-for-duty (FFD) programs, including granting, denying, and revoking unescorted access authorization into the protected area, as appropriate.

Basis: This is a risk significant area because the personnel screening and FFD processes are used to verify personnel reliability and trustworthiness prior to granting unescorted access to the site protected and vital areas and to assure continued reliability and trustworthiness throughout the period of unescorted access and authorization. The establishment of reliability and trustworthiness for persons granted unescorted access to the protected area is a major component of protection against the insider threat as defined in 10 CFR 73.1 of radiological sabotage. The behavioral observation process is used to monitor the continuation of trustworthiness for persons authorized unescorted access and for escorted visitors.

An individual with malevolent intent or an individual under the influence of drugs could be granted unescorted access due to human or program failure. The frequency of this type of event has been low but the safety significance of this type event can be medium to high. The probability of a single individual causing a radiological release is low although the consequences of an individual causing a radiological release can be high depending on the individual's knowledge of plant systems.

Historically, licensees have effectively implemented the personnel screening and FFD programs.

The licensee is required by 10 CFR 73.56 to maintain an access authorization program, which includes background investigations and psychological assessments, for granting individuals unescorted access to protected and vital areas with the objective of providing high assurance that the individuals are trustworthy and reliable and do not constitute an unreasonable risk to public health and safety including the potential to commit radiological sabotage. The licensee is also required by 10 CFR 26.10 to maintain a FFD program that provides reasonable assurance that the workforce will perform tasks in a reliable and trustworthy manner and that they are not under the influence or impaired from any cause. Both rules require behavioral observation to detect indications of behavioral problems that could constitute a threat to public health and safety.

Performance Indicators: This area will be assessed by a performance indicator after an initial verification and validation inspection is done to confirm implementation of the program is acceptable and that reporting thresholds for a significant event meets regulatory expectations. The initial verification and validation inspection will serve to ensure valid data is used for the performance indicator. There will be a two-part PI for this area, one for access authorization and one for FFD. The performance indicator for this area will be based on the collective number and nature of reportable events from the combination of events for access authorization and FFD. The PI data will be analyzed to determine trends. The PI provides some data regarding this inspectable area. The data provided is currently available and there are regulatory requirements to report significant events in the areas of Personnel Screening and FFD. Performance indicators are established on the number of events reported to the NRC Operations Center. Inspection requirements are established based on reported events per calendar year: 0-2 events - no inspections; 3-5 events - a baseline inspection and 6 or more events - a reactive inspection. However, the performance indicator is limited in the behavior observation area and only covers reporting issues involving supervisors and operators, who are reported for drug/alcohol problems under the FFD program. Identification of these supervisors/operators may or may not have been through behavior observation identification. There are no other indicators to identify how effectively the program is being carried out in areas such as after duty hours call-outs, escort training, and manager/supervisor training. Consequently, a minimum baseline inspection should be conducted of the behavior observation program process and human performance attributes. This area should be reviewed after a 2-year period to evaluate the threshold's validity and to make adjustments as necessary.

Significant Changes in Scope or Basis:

Figure 35 IP 71130.01 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Access Control (Search of Personnel, Packages, and Vehicles; Identification and Authorization)	
Cornerstone(s): Physical Protection	**Inspection Procedure:** IP 71130.02
Scope: This area will verify that the licensee has effective access controls and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area that could be used to commit radiological sabotage and to assure that only authorized personnel are permitted unescorted access to the site protected area and vital areas. The Identification and Authorization process is to assure that, once personnel have been screened to verify their trustworthiness, those persons have a need for access and to confirm that only those persons who have been screened and have a need are granted access to the plant including vital areas. Some of the equipment involved are metal detectors, explosive detectors, x-ray machines, biometric sensors, computers, key-cards, hard keys, and card-readers.	
Basis: The areas to measure are the effectiveness of the search (personnel, packages and vehicles) and the identification and authorization functions. The search function is to prevent the introduction of contraband (firearms, explosives, incendiary devices) that could be used to commit radiological sabotage. The search function for detection of firearms, explosives and incendiary devices on individuals, in packages, or vehicles, is accomplished by equipment listed above or a hands-on search. The identification and authorization functions are accomplished during issuing of badges and through the use of biometrics or card-readers. The licensee must also positively control all points of personnel and vehicle access into vital areas. The frequencies of an unauthorized individual being granted unescorted access or the introduction of contraband, described above, into the protected or vital areas are low and the consequence of risk to radiological sabotage is considered moderate.	
Performance Indicators: At this time there is no performance indicator for this inspectable area that measures both equipment and human performance at the same time. The combination of both is what is used to detect and vital to the prevention of contraband entering the protected area. Meaningful tracking data on the performance of access control was not practical since much of the performance is dependent on the quality of the implementation of the tasks. The areas of search and identification and authorization will be inspected as part of the baseline inspection program. The inspection will consist of procedure reviews, self assessment reviews, observations of personnel processing, security officer performance, and observation of routine testing of inspection equipment. The same level of inspection effort would be applicable if a PI was in place. These are areas where the effectiveness of doing the task determines the effectiveness of the processes and areas where many personnel in the security organization perform the tasks.	
Significant Changes in Scope or Basis: None	

Figure 36 IP 71130.02 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Response to Contingency Events (Protective Strategy and Implementation of Protective Strategy)	
Cornerstone(s): Physical Protection	**Inspection Procedure:** IP 71130.03
Scope: Verify that the licensee has the capability to protect its vital area target sets against the design basis threat. The implementation of the protective strategy includes demonstrating that the strategy works, and that security force can successfully protect against the design basis threat through drills and exercises.	
Basis: This is a high risk-significant system necessary to protect against the design basis threat of radiological sabotage. The licensee should be able to demonstrate the ability to respond with sufficient force, properly armed, appropriately trained and within the appropriate time frame to protected positions in order to interdict and defeat the design-basis adversary force in order to protect vital equipment necessary for the safe shutdown of the plant. The ability of the security force to effectively respond to the design basis threat is contingent upon the number of armed responders committed to in the physical security plan; the intrusion detection system being able to detect; the alarm status being communicated to the alarm stations; the assessment functions (closed-circuit television and lighting) and the training of central alarm station and secondary alarm station operators, communications on and off site, the response officers and response team leaders, including handling and qualification with assigned weapons, and the use of proper tactics. Each of these items will be reviewed to determine if they can perform their intended function in support of the design basis threat and as verification of the PI identified in the Physical Protection System inspectable area. The consequence to radiological sabotage if an attack did occur is high.	
Performance Indicators: The FFD/Personnel Reliability Program Performance PI has some overlap with this inspection procedure with regard to the protection against the insider threat. While the PI reduces the likelihood of occurrence of the design basis threat, the inspection procedure provides reasonable assurance that if the threat manifests itself, adequate protection against the threat is maintained.	
Significant Changes in Scope or Basis: Current policy dictates that Operational Security Response Evaluation (OSRE) force-on-force drills are conducted per IP 81110, "Operational Safeguards Response Evaluation (OSRE)."	

Figure 37 IP 71130.03 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Security Plan Changes	
Cornerstone(s): Physical Protection	**Inspection Procedure:** IP 71130.04
Scope: Inspection activities in this area focus upon those changes made by a licensee to the site Physical Security Plan, Safeguards Plan, or Training and Qualification Plan without prior Commission approval under the provisions of 10 CFR 50.54 and those changes to the facility, procedures, tests or the Updated Final Safety Analysis Report (UFSAR) performed under the requirements of 10 CFR 50.59. The inspection activities include a review of the documentation submitted by a licensee as specified by 10 CFR 50.54 and 50.59. A more detailed review would be performed on those changes made without prior Commission approval where a decrease of effectiveness has or could have resulted from the change or on those changes that have the potential to be and/or appear to be intent changes. Examples of inspection areas would include safety evaluations performed by the licensee for permanent and temporary facility modifications, procedure changes, UFSAR changes, emergency and security plan changes.	
Basis: Inspection of this area support the Mitigating Systems, Barrier Integrity, and Physical Security Cornerstones. Inspection of this item provides monitoring of the effectiveness of the licensee's programs and methods for implementing changes to facility SSCs, risk significant normal and emergency operating procedures, test programs, UFSAR and security plans and validates that the changes were made in accordance with the requirements of 10 CFR 50.54 and 10 CFR 50.59. This review provides verification that the changes made do not appear to reduce the safety margins of the SSCs or reduce the effectiveness of the licensee security plans.	
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:	

Figure 38 IP 71130.04 Basis Summary Sheet

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 baseline and other inspections which cover these attributes. 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 are 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: None	

Figure 39 IP 71150 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Performance Indicator Verification	
Cornerstone(s): All Seven	**Inspection Procedure:** IP 71151
Scope: This item includes all 18 performance indicators (PIs). In the verification process, historical data prior to ROP initial implementation shall not be verified unless it pertains to the safety system unavailability PI.	
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. Each performance indicator will be verified once a year. The performance indicator verifications will be planned inspections during which either the 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 are performed as part of the various inspectable areas within the cornerstone inspection procedures. A review of licensee self assessment shall not be substituted for independent inspector verification of PIs. Inspection intervals for each PI should not exceed 15 months, to allow some flexibility in independently verifying all the PIs annually.	
Significant Changes in Scope or Basis: 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.	

Figure 40 IP 71151 Basis Summary Sheet

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. 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. The inspector shall select a set of outputs from a selected program for review. For each cornerstone of interest, a sample set comprising licensee assessments and deficiency reports will be selected for review. The selection will be made using information contained in the Risk Information Matrix (RIM) and insights gained from site-specific probabilistic risk assessment (PRA) results, industry experience and NRC inspection findings. Where site specific toxic hazards and grid stability problems have been identified, the resolution of these types of issues should be included in a review of corrective actions. For selected programs, additional issues may be identified by periodic observations of specific activities such as operator simulator training, or emergency preparedness, security and fire protection drills and exercises. Some issues may also be identified by reviewing operating experience information, engineering and maintenance work request data bases, operator work around lists and the non-conformance report data base. Collectively, these issues shall also be reviewed for inclusion in the sample set. When reviewing the sample set, consider whether individuals involved in the problem identification and resolution process effectively identify, resolve and correct risk-significant problems. Additionally determine if risk insights were used to allocate licensee resources for investigating and correcting identified deficiencies. 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) root 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. Periodically during the inspection, discuss issues with the residents (or other inspection team members if applicable) to identify common issues that cross other cornerstones. For example, procedural adherence problems in the Occupational Exposure, Initiating Events and Barrier Integrity Cornerstones. Review the common finding as stated above and determine if the licensee was aware of the common issues. 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. 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.	

Figure 41 IP 71152 Basis Summary Sheet

Basis Summary Sheet
Inspectable Area: Identification and Resolution of Problems/Issues
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: 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.

Figure 41 IP 71152 Basis Summary Sheet (continued)

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. 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: None	

Figure 42 IP 71153 Basis Summary Sheet

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. March 2001 - Clarified program requirements and policies, and other minor changes. Added guidance on how to address findings outside of the inspector's normal area of inspection, and how to charge time for entrance and exit meetings; for obtaining IIPB concurrence when planning significant alterations in the baseline inspection program for a site or plant. Removed guidance duplicated in other program documents (e.g., 2515 Append A).	

Figure 43 IMC 2515 Basis Summary Sheet

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: April 2000 - Essentially a new document for the baseline inspection program. Explains the concept and philosophies behind the ROP and baseline inspection concepts. 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. 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 44 IMC 2515, Appendix A Basis Summary Sheet

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 public confidence, improving the effectiveness and efficiency of the regulatory process, and reducing unnecessary regulatory burden.	
Significant Changes in Scope or Basis: None	

Figure 45 IMC 2515, Appendix B Basis Summary Sheet

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, nonnormal 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: April 2000 - Initial issuance of appendix C for ROP. 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. 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.	

Figure 46 IMC 2515, Appendix C Basis Summary Sheet

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.

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.

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:
April 2000 - Initial issuance of Appendix D.

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 (Ref. DBLLTF Item 3.2.1(2)).

Figure 47 IMC 2515, Appendix D Basis Summary Sheet

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: None	

Figure 48 IP 95001 Basis Summary Sheet

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: None

Figure 49 IP 95002 Basis Summary Sheet

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: None	

Figure 50 IP 95003 Basis Summary Sheet

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: None	

Figure 51 IP 93812 Basis Summary Sheet

Basis Summary Sheet	
Inspectable Area: Staff Guidelines for Oversight of Operating Reactor Facilities in an Extended Shutdown as a Result of Significant Performance Problems	**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.

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.

The third major area of enhancement is establishing criteria for exiting the IMC 0350 process. Recognizing that performance indicators are not immediately valid upon restart, it is deemed prudent to maintain a licensee under the 0350 process until the PIs have enough operational data to become valid and the staff can justify a return to the routine oversight process.

Significant Changes and Basis:
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.

Figure 52 IMC 0350 Basis Summary Sheet

Table 1 Inspectable Areas by Cornerstone							
Inspectable Area	Initiating Events	Mitigating Systems	Barrier Integrity	Emergency Preparedness	Occupational Radiation Safety	Public Radiation Safety	Physical Protection
Access control to radiologically significant areas					X		
Access authorization							X
Access control							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	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	Physical Protection
Maintenance risk assessments and emergent work control	X	X	X				
Maintenance effectiveness	X	X	X				
Operability evaluations		X	X				
Operator workarounds		X					
Permanent plant modifications		X	X				
Personnel Performance during nonroutine evolutions	X	X	X				
Post maintenance testing		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				
Response to contingency events							X
Safety system design and performance capability		X					
Security plan changes							X
Surveillance testing		X	X				
Temporary plant modifications		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 previously identified issues.	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 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)

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**
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 environment is maintained. Failure of fuel cladding would increase the radiation dose to workers and potentially to members of the public.	A performance indicator is provided for RCS activity.
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.
Severe Accident Management Guidelines (SAMG)	Emergency Preparedness	SAMGs include strategies for dealing with accidents that impact RCS integrity. SAMGs are sometimes implemented during EP drills and must be written is such a manner as to not impede implementation of the Plan.	The staff concluded that regular inspection of SAMG was not appropriate because the guidelines are voluntary and have no regulatory basis. The emergency response organization that would implement SAMGs is inspected through EP baseline inspection and performance is covered by two PIs.

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**
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.
Physical Protection System (Barriers, Intrusion Detection System, and Alarm Assessment)	Physical Protection	Verify that the licensee has an effective physical protection system in place capable of providing high assurance that the facility is protected against the external threat of radiological sabotage. The system includes protected and vital area barriers, associated intrusion detection systems, and alarm assessment capabilities. This is a risk significant system that is necessary for protection against the external threat of radiological sabotage. Operability of the protected area intrusion detection system and of the vital area intrusion detection system is necessary to identify and initiate response to security events. The system is the first line of defense in the "defense-in-depth" concept of protection against radiological sabotage. The risk significance is based on an exploitable vulnerability by a person(s) with the intent and capability of committing radiological sabotage. The frequency of occurrence of this type event has been low. However, the consequences of such an event would be moderate to high.	This area will be assessed by the Protected Area Security Equipment Performance Index PI.