# Palisades
# 3Q/2013 Plant Inspection Findings

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## Initiating Events

**Significance:** G Mar 31, 2013
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
**Failure to Take Corrective Action to Prevent Recurrence of Control Rod Drive Mechanism Pressure Boundary Leakage**
A self-revealing finding of very low safety significance (Green) with associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, and Technical Specification (TS) 3.4.13, Primary Coolant System (PCS) Operational Leakage, was identified for failure to take corrective actions to prevent recurrence of Control Rod Drive Mechanism (CRDM) cracking and leakage, a significant condition adverse to quality (SCAQ). Specifically, for Criterion XVI the licensee failed to include the internal CRDM housing weld build-up area within the scope of corrective actions taken for a 2001 CRDM through wall leak on CRDM-21, caused by transgranular stress corrosion cracking (TGSCC). Subsequently, a through wall leak recurred in the weld build-up area on CRDM-24 in 2012 due to TGSCC. As a result, the licensee operated with PCS pressure boundary leakage, which is not allowed by TS 3.4.13. Further, because the licensee was not aware that the leakage was PCS pressure boundary leakage, the licensee did not implement the associated TS action statement. The licensee replaced CRDM-24 upper housing and entered the issue into their corrective action program as CR PLP 2013-01134. Additional corrective actions are described in NRC Inspection Report 05000255/2012012.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix B, “Issue Screening,” because it was associated with the Initiating Events Cornerstone attribute of equipment performance and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability. Specifically, the licensee did not take adequate corrective actions to prevent recurrence of leakage in CRDM housings, which represents pressure boundary leakage. The inspectors determined this finding was of very low safety significance (Green) because the leak would not have exceeded the reactor coolant system leak rate for a small LOCA and could not have likely affected other systems used to mitigate a LOCA resulting in a total loss of their function. Specifically, the slow rate of change for leakage for TGSCC in type 316 stainless steel will experience leakage rates well below a small break LOCA, which would be observed through the crack, alerting operators to take action to shut down the plant prior to experiencing a component rupture. The cause of this finding, non-conservative decision making, occurred over 10 years ago and is well outside of the nominal 3 year period in IMC 0612 for cross-cutting aspects. Therefore, this is not indicative of current performance, because no other opportunities to identify the issue occurred during the previous 3-year period. However more recently, the licensee exhibited non-conservative decision making with respect to addressing the potential for CRDM housing cracking and leakage during the recent root cause (Section 4OA2.4 (b.2) of this report), resulting in another finding. This cross-cutting aspect will be captured through the other finding.
Inspection Report# : 2013002 *(pdf)*

**Significance:** G Mar 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Adequately Address the Generic Implications of the Cracking Identified in Control Rod Drive**

**Mechanism- 24**
The inspectors identified a finding of very low safety significance (Green) with an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, for the licensee's failure to accomplish quality activities in accordance with the prescribed procedures. Specifically, the licensee failed to adequately evaluate and document the generic implications of the cause of the 2012 cracking identified in Control Rod Drive Mechanism (CRDM)-24 in accordance with a quality procedure, Procedure, EN-LI-118, "Root Cause Evaluation." This issue was entered into the licensee's Corrective Action Program (CAP) under CR-PLP-2013-01500. Subsequently, the licensee decided to revise the inspection plan to add additional corrective actions to inspect a sample of welds No. 3 and No. 4 for transgranular stress corrosion cracking (TGSCC) during the upcoming refueling outage.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, absent NRC identification, the licensee would not have completed further evaluations or inspections of CRDM housing welds, which could have resulted in additional CRDM housing failure and leakage by TGSCC. In accordance with Table 2, "Cornerstones Affected by Degraded Condition or Programmatic Weakness," of IMC 609, Attachment 4, "Initial Characterization of Findings," the inspectors determined that the finding was associated with the Initiating Events Cornerstone because the failure of a CRDM housing is a Primary System Loss of Cooling Accident (LOCA) initiator contributor. Using Exhibit 1, "Initiating Events Screening Questions," in IMC 0609, Attachment A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined this finding was of very low safety significance because the leak would not exceed the reactor coolant system leak rate for a small LOCA and would not have likely affected other systems used to mitigate a LOCA resulting in a total loss of their function. Specifically, the slow rate of change for leakage for TGSCC in type 316 stainless steel will experience leakage rates well below a small break LOCA, which would be observed through the crack, alerting operators to take action to shut down the plant prior to experiencing a component rupture. The inspectors determined that the primary cause of the failure to adequately consider welds No. 3 and No. 4 in the generic implications section of the root cause report (RCR) related to the decision making cross-cutting component in the human performance area because licensee staff did not use conservative assumptions in decision making. Specifically, the licensee did not use conservative assumptions when excluding welds No. 3 and No. 4 as being susceptible to TGSCC when there was not enough information to exclude them from consideration.
Inspection Report# : 2013002 *(pdf)*

**Significance:** G Dec 31, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Perform Immediate Operability Determination**
The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR 50 Appendix B, Criterion V, for the failure to perform an immediate operability determination in accordance with EN OP 104, Operability Determination Process. After discovering a non isolable steam leak on a main steam header drain valve (an American Society of Mechanical Engineers (ASME) Class 2 system) at approximately 2:30 a.m., the licensee failed to perform the steps specified in EN-OP-104 to expeditiously evaluate and to document a basis for operability. In addition, EN-OP-104 required input from engineering to be obtained for an ASME Class 2 thru wall leak. However, the night-shift operators did not obtain input from engineering and did not document the basis for operability. After day shift took over in the morning around 6:30 am, engineering and management were contacted and more rigorous efforts to assess operability commenced. The licensee subsequently declared the associated primary coolant system (PCS) loop, which requires an operable steam generator, to be inoperable at 11:15 am (approximately 9 hours after the condition was initially documented) and shut down the plant to repair the leak. The inspectors determined that not completing an immediate determination in accordance with EN OP 104 caused an unnecessary delay in commencing a plant shutdown to repair the non-isolable leak. The licensee entered this issue into their corrective action program as CR PLP 2013 00158.

The issue was determined to be greater than minor in accordance with IMC 0612, Appendix B, because if left uncorrected, it could lead to a more significant safety concern. Specifically, the failure to perform an immediate operability determination when assessing safety related components, including a delay in requesting assistance, could lead to more significant issues. The performance deficiency also affected the Initiating Events cornerstone attribute of Equipment Performance, adversely impacting the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The issue was determined to be of very low safety significance (Green) because it did not cause a reactor trip AND a loss of accident mitigation equipment. The finding had an associated cross cutting aspect in the decision making component of the human performance area because the night-shift operators did not obtain interdisciplinary input and reviews on the safety-significant operability decision (H.1.a).

Inspection Report# : 2012005 *(pdf)*

**Significance:** G Dec 31, 2012
Identified By: NRC
Item Type: FIN Finding
**Failure to Appropriately Implement Procedure, "Working Hour Limits for Non-Covered Workers."**
A finding of very low safety significance was identified by the inspectors for the programmatic failure to appropriately implement procedure, EN FAP OM 006, “Working Hour Limits for Non Covered Workers.” Two non covered supervisors and six individual contributors, performing work or overseeing work on a safety related component, did not follow the procedural requirements of obtaining supervisor approval prior to exceeding working hour limits, document excess work hours in the payroll system, or initiate a condition report in a timely manner. An extent of condition review identified two additional instances of individuals, one contractor and one plant employee, not obtaining prior approval to exceed work hour limits nor completing the appropriate documentation. No violation of regulatory requirements occurred since the performance deficiency involved workers not covered by 10 CFR 26.205 through 26.209, which defines the work hour limitations and exceptions for covered workers. The licensee documented the programmatic weaknesses associated with the use of EN FAP OM 006 in their corrective action program. The “Working Hour Limits for Non Covered Workers” procedure was revised to clarify when and by whom condition reports should be written when working hour limits are to be exceeded, as well as, who should write the report.

The finding was more than minor in accordance with IMC 0612, Appendix B, because if left uncorrected, the programmatic failure to appropriately implement work hour limitations for non covered workers could lead to more significant safety concerns associated with fatigue potentially impacting the conduct and oversight of work on safety significant components. The performance deficiency also affected the Initiating Events cornerstone attribute of Equipment Performance, adversely impacting the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the individuals who exceeded the working hour limits for non covered workers were involved in a forced outage for repair and inspection of a control rod drive mechanism housing (part of the primary coolant system pressure boundary) that had a thru wall leak which caused an emergent plant shutdown. Management review of this issue per IMC 0609 Appendix M, “Significance Determination Process Using Qualitative Criteria,” effective April 12, 2012, determined that this finding was of very low safety significance, or Green, since the performance deficiency did not directly contribute to the event. The finding had a cross cutting aspect in the area of Problem Identification and Resolution, related to the cross cutting component of Corrective Action Program, in that the licensee thoroughly evaluates problems such that the resolutions address causes and extent of conditions and also includes, for significant problems, conducting effectiveness reviews of corrective actions to ensure that the problems are resolved. In this finding, similar instances of non covered workers not adhering to the standards for work hour limits and not initiating condition reports as required by EN FAP OM 006 were identified in 2011, and the corrective actions for those issues were not sufficient to prevent them from occurring again [P.1(c)].

Inspection Report# : 2012005 *(pdf)*

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# Mitigating Systems

**Significance:** G Jun 30, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**Inadequate Control of Welding at the F East Nozzle Reinforcement Plate**
The inspectors identified a finding of very low safety significance and an associated non-citied violation of 10 CFR 50, Appendix B, Criterion IX, "Control of Special Processes," for the licensee's failure to perform adequate pre weld cleaning and control the welding process in a manner that ensured proper weld fusion of the F East nozzle reinforcement plate weld joint within the safety injection refueling water storage tank (SIRWT). Consequently, this weld failed in service causing leakage from the SIRWT. The licensee subsequently replaced the floor of the SIRWT and included instructions in the floor replacement work order that required pre weld cleaning with acetone or other approved solvents. The licensee entered the issue in their corrective action program (CAP) as CR PLP 2013 03185.

The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because the inspectors answered "yes" to the More than Minor screening question, "If left uncorrected, would the performance deficiency have the potential to lead to a more significant safety concern"? Absent NRC identification, the failure to adequately clean aluminum prior to welding and adequately control the repair welding techniques may have been repeated during future repairs to the SIRWT and resulted in lack of fusion type weld defects/cracks returned to service. Unstable cracks could propagate and create failure of the SIRWT pressure boundary resulting in loss of inventory and increase the risk for insufficient core cooling for post Loss-of-Coolant Accident (LOCA) conditions. Therefore, this finding adversely affected the mitigating systems cornerstone attribute of equipment performance (reliability). The inspectors determined this finding was of very low safety significance (Green) based on answering "no" to the questions in Part A of Exhibit 2, "Mitigating Systems Screening Questions," in IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At Power." Specifically, the small amount of leakage from the SIRWT weld leak did not result in loss of a mitigating system function. Therefore, this finding screened as having very low safety significance (Green). This finding has a cross cutting aspect in the area of human performance for the resources component because the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety was supported.
Inspection Report# : 2013003 *(pdf)*

**Significance:** G Jun 30, 2013
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
**Failure to Follow Corrective Action Process for Service Water Leaks**
A finding of very low safety significance with an associated non-citied violation of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self revealed for the failure to adhere to the requirements of the site's corrective action process. Specifically, the station failed to complete corrective actions to address cavitation induced erosion of service water system components, which resulted in additional through wall leaks and other adverse conditions in that safety related system. Since 1993, this phenomenon caused several through wall leaks and the failure of a valve, which isolated normal service water flow to a component cooling water heat exchanger. Corrective actions to replace valves susceptible to this type of erosion were not implemented, and actions to utilize more effective non destructive examination (NDE) techniques to assess piping or development of pre emptive repair/replacement strategies were not performed, resulting in further leaks from the service water system. The current

corrective action process procedure, EN LI 102, states that corrective actions are determined, implemented, and adequate to resolve conditions. The licensee entered the issue in their corrective action program (CAP) as CR PLP 2013 05813.

The issue was determined to be greater than minor in accordance with IMC 0609 Appendix B, “Issue Screening,” issue date September 7, 2012, because it adversely affected the equipment performance attribute of the mitigating systems cornerstone whose objective is to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a through wall leak can challenge the integrity of the piping and system function. The inspectors concluded the finding was of very low safety significance (Green) utilizing IMC 0609, “Significance Determination Process,” issue date June 2, 2011. Specifically, in Attachment 4, issue date June 19, 2012, utilizing Exhibit 2 of Appendix A, all questions in Section A were answered ‘no’ since the leaks did not result in a loss of safety function. The finding had an associated cross cutting aspect in the area of problem identification and resolution for the operating experience component. Specifically, the licensee did not implement and institutionalize operating experience through changes to station processes and procedures.

Inspection Report# : 2013003 *(pdf)*

**Significance:** G Mar 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Establish an Acceptable Component Cooling Water Heat Exchanger Final Test Frequency**
The inspectors identified a finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XI, ”Test Control”, for failure to establish testing to demonstrate the safety-related Component Cooling Water (CCW) heat exchangers would perform satisfactorily in service. Specifically, the licensee failed to demonstrate the heat exchanger’s fouling factors would remain acceptable to ensure adequate heat transfer capability prior to changing the inspection, cleaning, eddy current testing, and thermal performance testing frequency to 12 years. The licensee entered this issue into their Corrective Action Program as CR-PLP-2012-05132 and CR-PLP-2013-00544 and implemented actions to revise the inspection, cleaning, testing, and maintenance frequencies to less than 5 years.

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability reliability and capability of systems needed to respond to initiating events to prevent undesired consequences. Specifically, the inappropriate test frequency affected the licensees’ ability to ensure the CCW heat exchangers were available and capable to reliably perform as expected. The finding screened as of very low safety significance (Green) because the inadequate test program was not a design deficiency and did not result in a loss of system or component function. This finding has a cross-cutting aspect in the area of human performance, decision making because the licensee did not use conservative decision making and did not conduct effectiveness reviews of safety significant decisions to verify the validity of underlying assumptions, identify possible unintended consequences, or determine how to improve future decisions. Specifically, the licensee failed to use conservative decision-making or verify the validity of underlying assumptions when evaluating the effect that reducing the frequency of testing, inspection, cleaning, and maintenance would have on the CCW heat exchangers.

Inspection Report# : 2013002 *(pdf)*

**Significance:** G Mar 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**Inadequate Work Instructions for Component Cooling Water Heat Exchanger**

The inspectors identified a finding of very low safety significance (Green) with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to properly plan and document work on the safety-related ‘A’Component Cooling Water (CCW) heat exchanger during a forced outage to repair leaks in the heat exchanger. Contrary to Criterion V and site implementing procedures EN-DC-115, Engineering Change Process, and EN-WM-105, Planning, the licensee did not ensure that appropriate quantitative or qualitative acceptance criteria for determining that important activities affecting quality were included in the work done to re-plug a population of leaking tubes in the heat exchanger. The licensee changed the work instructions to include the acceptance criteria after questioning by the inspectors. The licensee also interviewed workers to ensure the criteria had been utilized during earlier plug installation. The licensee entered the issue into their Corrective Action Program as CR-PLP-2013-00773 and CR-PLP-2013-00969.

The issue was determined to be greater-than-minor per IMC 0612, Appendix B, “Issue Screening,” because if left uncorrected, it could lead to a more significant safety concern. The inspectors’ decision was informed by examples 3j and 3k in IMC 0612, Appendix E, “Examples of Minor Issues.” The examples refer to an issue not being minor if significant programmatic deficiencies were identified with the issue that could lead to worse errors if left uncorrected. When the issue was first raised by the inspectors, only one of the two critical parameters was initially added to the revised work instructions. Further, two examples of inadequate documentation were identified. A basis for removing steps to check for leaks was not properly documented; and it was not clear from the completed work packages that the engineering acceptance criteria were met. Given these issues, the inspectors determined the threshold for a finding was met. The inspectors concluded the finding adversely impacted the Mitigating Systems Cornerstone objective and was of very low safety significance (Green) utilizing IMC 0609, “Significance Determination Process.” Specifically, utilizing Exhibit 2 of Appendix A, all questions in Section A were answered ‘no’. The finding had an associated cross-cutting aspect in the work control component of the human performance area. Specifically, the licensee did not coordinate work activities by incorporating actions to ensure interdepartmental alignments were made while planning and executing the work to assure plant and human performance

Inspection Report# : 2013002 *(pdf)*

**Significance:** G Mar 31, 2013
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
**Damage to 'A' Auxiliary Feedwater (AFW) Pump Packing During Surveillance Run**
A self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V was identified for the failure to conduct the ‘A’ Auxiliary Feedwater (AFW) pump technical specification surveillance test in accordance with the prescribed in-service test procedure. Specifically, plant personnel conducting the surveillance test on the ‘A’ AFW Pump adjusted packing when it was not required per the guidance in the procedure, which caused the pump packing to overheat and start smoking, resulting in unplanned inoperability of the pump. The licensee documented the issue in their corrective action program as CR-PLP-2013-01128 and completed an apparent cause evaluation. Planned corrective actions included revising the in-service test procedure.

The finding was more than minor in accordance with IMC 0612, Appendix B, “Issue Screening,” because it was associated with the Mitigating Systems Cornerstone attribute of human performance and adversely impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a packing adjustment was made without being required by the procedure, causing the pump to overheat, which resulted in unplanned inoperability of the safety-related and risk significant ‘A’ AFW pump. The finding had an associated cross cutting aspect in the area of human performance related to the cross cutting component of resources, in that the licensee ensures plant personnel have complete, accurate, and up-to-date design documentation, procedures, and work packages. In this finding, the fact that the ‘A’ AFW pump has a unique packing design was not evident in the procedure being used and was not discussed during the pre-job briefs.

Inspection Report# : 2013002 *(pdf)*

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# Barrier Integrity

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# Emergency Preparedness

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# Occupational Radiation Safety

**Significance:** G Sep 30, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Monitor in Alpha 3 Area**
The inspectors identified a finding of very low safety significance and an associated NCV of Technical Specification (TS) 5.4.1. Specifically, the licensee failed to perform air sampling as required by station procedure EN RP-122 "Alpha Monitoring." The issue was entered in the licensee's Corrective Action Program (CAP) as CR PLP 2013 02054. The licensee's immediate corrective actions included performance management of the radiation protection technician and direct radiation protection supervisor oversight of the work activity.

The finding is more than minor because it was associated with the program and process attribute of the occupational radiation safety cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, not monitoring the worker intake in an Alpha Level 3 area affected the licensee's ability to assess workers internal exposures in a timely manner, and adversely impacted the licensee's ability to monitor, control, and limit radiation exposures (i.e., committed effective dose equivalent or internal dose). In accordance with IMC 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because the finding did not involve: (1) as low as reasonably achievable (ALARA) planning and controls; (2) a radiological overexposure; (3) a substantial potential for an overexposure; and (4) a compromised ability to assess dose. The inspectors determined that the primary cause of this finding was related to the cross cutting aspect of problem identification and resolution in the component of corrective actions, specifically the licensee did not take appropriate corrective actions to address safety issues and adverse trends in Alpha monitoring in a timely manner, commensurate with their safety significance and complexity.
Inspection Report# : 2013004 *(pdf)*

**Significance:** G Mar 31, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
**Failure to Perform Derived Air Concentration (DAC)-Hour Tracking**
The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation of Technical Specification 5.4.1. Specifically, the licensee failed to perform Derived Air Concentration (DAC)-Hour tracking for airborne transuranic radioactivity as required by a quality plant procedure, EN-RP-131, "Air Sampling," resulting in untimely internal dose assessments for selected plant workers. The issue was entered in the licensee's corrective

action program as CR-PLP-2012-02683. The licensee's immediate corrective actions included re-evaluating the use of site-specific work instructions. Long-term corrective actions included procedure changes and completing the required personnel dose assessments utilizing upper bounding radiological conditions.

The finding is more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, not performing DAC-Hour tracking for airborne transuranic radioactivity affected the licensee's ability to assess workers internal exposures in a timely manner and adversely impacted the licensee's ability to monitor, control and limit workers' radiation exposures (committed effective dose equivalent or internal dose). In accordance with IMC 0609 Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because the finding: (1) did not involve as-low-as-is-reasonably-achievable (ALARA) planning and controls; (2) did not involve a radiological overexposure; (3) there was not a substantial potential for an overexposure; and (4) there was no compromised ability to assess dose. The inspectors determined that the primary cause of this finding was related to a cross-cutting aspect in the area of human performance, resources component, such that the licensee maintains complete, accurate and up-to-date procedures and work packages.
Inspection Report# : 2013002 *(pdf)*

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the cover letters to security inspection reports may be viewed.

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## Miscellaneous

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