

Palo Verde 1

3Q/2006 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PRECLUDE A SIGNIFICANT CONDITION ADVERSE TO QUALITY

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the failure of licensee personnel to preclude repetition of a significant condition adverse to quality. Specifically, on April 17, 2006, and for the second time in two years, a submersible vehicle was suctioned into a system providing cooling to nuclear fuel, rendering the system inoperable. Following the April 11, 2004, event, the licensee's corrective actions concentrated on a lack of instructions and a lack of communications with the control room. While it was recognized that the event was transportable to other systems, and that the consequences could have been more severe, the corrective actions were limited in scope and were not adequate to preclude repetition. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2885213.

The finding is greater than minor because it is associated with the configuration control and human performance cornerstone attributes of the initiating events cornerstone and affects the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," Checklist 4, the finding is determined to have very low safety significance because the finding did not increase the likelihood of a loss of reactor coolant system inventory. Additionally, the finding did not degrade the licensee's ability to terminate a leak path or add reactor coolant system inventory, neither did it degrade the licensee's ability to recover decay heat removal once it is lost. The cause of the finding is related to the crosscutting element of problem identification and resolution in that licensee personnel did not implement corrective actions to preclude repetition of a significant condition adverse to quality. Additionally, the cause of the finding is related to the crosscutting element of human performance in that licensee personnel did not stop movement of the submersible upon becoming disoriented.

Inspection Report# : [2006003\(pdf\)](#)

Mitigating Systems

Significance: TBD Sep 26, 2006

Identified By: NRC

Item Type: AV Apparent Violation

INADEQUATE TEST CONTROL TO PROMPTLY IDENTIFY UNACCEPTABLE PERFORMANCE TEST RESULTS

A finding with five apparent violations was identified associated with fouling of safety-related heat exchangers cooled by the emergency spray pond system. Between 1995 and May, 2006, the licensee failed to recognize that improperly implemented chemistry controls for the emergency spray pond system caused a significant condition adverse to quality which degraded the performance of all emergency diesel generators and emergency cooling water systems. The degraded performance was primarily due to heat exchanger fouling caused by adding excessive amounts of chemicals. The conditions that existed also had the potential to cause scaling after an accident starts. In one instance, it is estimated that this resulted in degrading the performance of Emergency Cooling Water Heat Exchanger 2B to the point where it would not have been capable of performing its intended safety function for approximately 6.8 months in 2003.

An apparent violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified because the two

procedures that were performed to measure essential cooling water heat exchanger performance were implemented in a way that was inadequate to ensure the timely determination that the requirements and acceptance limits contained in applicable design documents were met.

The performance deficiency associated with these apparent violations was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, Essential Cooling Water (EW) Train B in Unit 2 was estimated to have been incapable of performing its function under existing conditions for approximately 6.8 months. A Phase 2 significance determination process concluded that this finding has potential safety significance greater than very low safety significance because some accident sequences, notably loss of coolant accidents, were expected to elevate the ultimate heat sink temperature to the point where the degraded essential cooling water heat exchanger would be challenged. This was expected to cause failure of the essential chiller, and the resulting loss of room cooling to safety-related equipment increased the plant risk. In addition, there is uncertainty associated with the amount of scaling that could occur on any of the affected heat exchangers for all three units during 24 hours of an accident scenario. Additional information was needed to perform a final Phase 3 assessment, due to the complexity of the issue

Inspection Report# : [2006011\(pdf\)](#)

Significance: TBD Sep 26, 2006

Identified By: NRC

Item Type: AV Apparent Violation

50.59 REVIEWS NOT PERFORMED OR INADEQUATE FOR MULTIPLE CHANGES TO SPRAY POND CHEMISTRY CONTROL PROCEDURE

A finding with five apparent violations was identified associated with fouling of safety-related heat exchangers cooled by the emergency spray pond system. Between 1995 and May, 2006, the licensee failed to recognize that improperly implemented chemistry controls for the emergency spray pond system caused a significant condition adverse to quality which degraded the performance of all emergency diesel generators and emergency cooling water systems. The degraded performance was primarily due to heat exchanger fouling caused by adding excessive amounts of chemicals. The conditions that existed also had the potential to cause scaling after an accident starts. In one instance, it is estimated that this resulted in degrading the performance of Emergency Cooling Water Heat Exchanger 2B to the point where it would not have been capable of performing its intended safety function for approximately 6.8 months in 2003.

An apparent violation of 10 CFR 50.59 was identified for making nine revisions to Procedure 74DP-9CY04, "System Chemistry Specification," a procedure described in the Updated Final Safety Analysis Report, between 1998 and 2004 without performing evaluations of the potential impact of the changes on the safety-related components in the spray pond system; the changes revised spray pond chemistry parameter limits which were subsequently determined to have contributed to heat exchanger fouling.

The performance deficiency associated with these apparent violations was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, Essential Cooling Water (EW) Train B in Unit 2 was estimated to have been incapable of performing its function under existing conditions for approximately 6.8 months. A Phase 2 significance determination process concluded that this finding has potential safety significance greater than very low safety significance because some accident sequences, notably loss of coolant accidents, were expected to elevate the ultimate heat sink temperature to the point where the degraded essential cooling water heat exchanger would be challenged. This was expected to cause failure of the essential chiller, and the resulting loss of room cooling to safety-related equipment increased the plant risk. In addition, there is uncertainty associated with the amount of scaling that could occur on any of the affected heat exchangers for all three units during 24 hours of an accident scenario. Additional information was needed to perform a final Phase 3 assessment, due to the complexity of the issue

Inspection Report# : [2006011\(pdf\)](#)

Significance: TBD Sep 26, 2006

Identified By: NRC

Item Type: AV Apparent Violation

INADEQUATE IDENTIFICATION AND CORRECTIVE ACTION FOR DEGRADED EW HEAT EXCHANGER PERFORMANCE

A finding with five apparent violations was identified associated with fouling of safety-related heat exchangers cooled by the emergency spray pond system. Between 1995 and May, 2006, the licensee failed to recognize that improperly

implemented chemistry controls for the emergency spray pond system caused a significant condition adverse to quality which degraded the performance of all emergency diesel generators and emergency cooling water systems. The degraded performance was primarily due to heat exchanger fouling caused by adding excessive amounts of chemicals. The conditions that existed also had the potential to cause scaling after an accident starts. In one instance, it is estimated that this resulted in degrading the performance of Emergency Cooling Water Heat Exchanger 2B to the point where it would not have been capable of performing its intended safety function for approximately 6.8 months in 2003.

An apparent violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified. On March 19, 2002, performance testing for Essential Cooling Water Heat Exchanger 2B indicated that the system would not be capable of performing its design function, but this significant condition adverse to quality was not promptly identified, the cause determined, or corrective actions taken to restore the required heat exchanger performance. The failure to correct this degraded performance contributed to the continued degradation and eventual loss of function for an estimated period of 6.8 months.

The performance deficiency associated with these apparent violations was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, Essential Cooling Water (EW) Train B in Unit 2 was estimated to have been incapable of performing its function under existing conditions for approximately 6.8 months. A Phase 2 significance determination process concluded that this finding has potential safety significance greater than very low safety significance because some accident sequences, notably loss of coolant accidents, were expected to elevate the ultimate heat sink temperature to the point where the degraded essential cooling water heat exchanger would be challenged. This was expected to cause failure of the essential chiller, and the resulting loss of room cooling to safety-related equipment increased the plant risk. In addition, there is uncertainty associated with the amount of scaling that could occur on any of the affected heat exchangers for all three units during 24 hours of an accident scenario. Additional information was needed to perform a final Phase 3 assessment, due to the complexity of the issue

Inspection Report# : [2006011\(pdf\)](#)

Significance: TBD Sep 26, 2006

Identified By: NRC

Item Type: AV Apparent Violation

INADEQUATE DESIGN CONTROL TO ENSURE NO EW HEAT EXCHANGER SCALING

An apparent violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for failure to correctly evaluate the scaling potential of the safety-related heat exchangers cooled by the emergency spray pond during a design basis accident. An error in the SEQUIL calculation caused the licensee to incorrectly conclude that scaling would not occur under the conditions established in the chemistry control program.

The performance deficiency associated with these apparent violations was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. Specifically, Essential Cooling Water (EW) Train B in Unit 2 was estimated to have been incapable of performing its function under existing conditions for approximately 6.8 months. A Phase 2 significance determination process concluded that this finding has potential safety significance greater than very low safety significance because some accident sequences, notably loss of coolant accidents, were expected to elevate the ultimate heat sink temperature to the point where the degraded essential cooling water heat exchanger would be challenged. This was expected to cause failure of the essential chiller, and the resulting loss of room cooling to safety-related equipment increased the plant risk. In addition, there is uncertainty associated with the amount of scaling that could occur on any of the affected heat exchangers for all three units during 24 hours of an accident scenario. Additional information was needed to perform a final Phase 3 assessment, due to the complexity of the issue

Inspection Report# : [2006011\(pdf\)](#)

Significance:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

TWO EXAMPLES OF FAILURE TO TRANSLATE SPRAY POND DESIGN ASSUMPTIONS INTO PLANT PROCEDURES CONTROL

Two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," were identified involving the failure to adequately translate the design basis of the spray ponds into procedures. Design Calculation 13-

MC-SP-0307, "SP/EW System Thermal Performance Design Basis Analysis," Revision 7, which demonstrated that the spray pond system could adequately limit spray pond temperature during a design basis accident did not account for any reduced heat capacity caused by sediment buildup. However, this fact was not translated into procedures, so approximately 400 cubic yards of sediment had built up in each of the six spray ponds when the team questioned the impact to the heat removal function. Also, the same calculation demonstrated that sufficient water was available to provide adequate cooling during a design basis accident, but did not account for any leakage from the ponds. The team determined that the licensee did not translate this into a procedure to ensure that the condition of the spray pond was maintained such that leakage did not occur. Procedure 81DP-0ZZ01, "Civil System, Structure, and Component Monitoring Program," Revision 11, was used to monitor the condition of the pond structures. The team identified that it examined only the exposed concrete surfaces, which constituted about 7 percent of the surface area and almost none of the water-containing volume. Cracks had been identified and repaired in this area, but the inspections were not expanded to the underwater surfaces. This issue was documented in Condition Report/Disposition Requests 2906671 and 2910912.

Failure to adequately translate the design basis of the spray ponds into procedures was a performance deficiency. This finding was determined to be more than minor because, if left uncorrected, the finding could become a more significant safety concern. This finding affected the Mitigating Systems Cornerstone. This performance deficiency screened as having very low safety significance in a Phase 1 significance determination process because the licensee was able to demonstrate that the sediment would not have resulted in a loss of safety function, and that significant leakage did not exist. The licensee was able to revise the calculation to take credit for heat absorption by the concrete walls, and scheduled inspections by divers of underwater portions of the ponds to follow sediment removal
Inspection Report# : [2006011\(pdf\)](#)

Significance:  Sep 26, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INADEQUATE OPERABILITY ASSESSMENTS FOR HEAT EXCHANGER DEGRADATION

A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," with multiple examples was identified for failure to adequately assess the impact to operability of degraded heat exchangers in the emergency diesel generators and essential cooling water system. Specifically, the licensee failed to follow Procedure 40DP-90P26, "Operability Determination and Functional Assessment," Revision 16, in assessing indications of degraded heat exchanger performance, an activity affecting quality. Key support organizations were not always involving operations personnel with questions that had a potential to affect the operability of safety-related equipment, or were informing operators only after the support organization had fully evaluated the condition, delaying actions that were required to be prompt. Also, operations personnel did not always insist on a rigorous evaluation. This issue was documented in Condition Report/Disposition Requests 2918892, 2901815, and 2898237.

Failure to adequately implement the operability assessment process was a performance deficiency. This finding was more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone objective to maintain the availability and reliability of systems needed to mitigate accidents. This finding screened as having very low safety significance in a Phase 1 significance determination process, because the examples used for this violation were confirmed not to involve any loss of safety function. This finding had cross-cutting aspects in the area of human performance because the licensee did not follow their systematic process for operability decision making when information was not brought to the right decision makers
Inspection Report# : [2006011\(pdf\)](#)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILED UNIT 1 CS TRAIN B PUMP ROOM FLOOD LEVEL SWITCH DUE TO NONCONFORMING DRAIN HOSE MANIFOLD BOXES

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure of operations personnel to verify or check the adequacy of the design of drain hose manifold boxes. Specifically, between 1997 and June 16, 2006, operations personnel failed to verify or check the adequacy of design of drain hose manifold boxes when the decision was made to leave the boxes permanently attached to the emergency core cooling system

pump vents. The failure to evaluate the drain hose manifold boxes resulted in the degradation of the Unit 2 low pressure safety injection Train A pump room level switch, and the failure of the Unit 1 containment spray Train B pump room level switch. On June 16, 2006, the drain hose manifold boxes were removed from the emergency core cooling system pump rooms in all three units. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2903515.

The finding is greater than minor because it is associated with the design control cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone, and using the flooding criteria, would not cause a plant trip or any of the initiating events used by Phase 2, and would not degrade two or more trains of a multi-train safety system. The cause of the finding is related to the crosscutting element of problem identification and resolution in that operations personnel failed to adequately evaluate the impact of degraded level switches on the ability to detect and respond to an emergency core cooling system pump room flooding event.

Inspection Report# : [2006003\(pdf\)](#)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE DEGRADED CONDITIONS TO ENSURE OPERABILITY

The inspectors identified two examples of a noncited violation of Technical Specification 5.4.1.a for the failure of engineering personnel to follow procedures. On April 17, 2006, engineering personnel failed to follow Procedure 81DP-0DC13, "Deficiency Work Order," resulting in shutdown cooling Train B being declared operable without fully addressing a potential degraded condition associated with the potential for missing parts from a submersible remaining in plant systems. On May 10, 2006, engineering personnel did not perform evaluations and dispositions required by Procedure 81DP-0DC13 to justify a degraded condition for continued use of a pipe support associated with shutdown cooling line Train A. These issues were entered into the licensee's corrective action program as Condition Report/Disposition Requests 2902258 and 2892737.

The finding is greater than minor because it would become a more significant concern if left uncorrected in that Technical Specification required structures, systems, and components (SSCs) may not be operable as required for applicable plant conditions. The performance deficiency associated with this finding was representative of a broader concern related to how the licensee ensures the operability of SSCs required to comply with Technical Specifications. Specifically, the licensee's programs and processes for assessing degraded conditions have not been implemented with the rigor and thoroughness necessary to ensure compliance with regulatory requirements. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not represent an actual loss of safety function. The cause of the finding is related to the crosscutting element of human performance in that engineering personnel did not follow procedures, resulting in the failure to perform required evaluations and dispositions for deficient conditions.

Inspection Report# : [2006003\(pdf\)](#)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

THREE EXAMPLES OF A TECHNICAL SPECIFICATION 3.0.4 VIOLATION

The inspectors identified three examples of a Green noncited violation of Technical Specification 3.0.4 for the failure of operations personnel to ensure the operability of required equipment prior to entry into a mode or other specified condition in the limiting condition for operations applicability. Specifically, on March 20, 2006, Mode 4 was entered with reactor coolant system pressure at 386 psia and only one operable train of containment spray. Unaware that any Technical Specification requirements were violated, operations personnel lowered reactor coolant system pressure below 385 psia and controlled pressure at this level as they proceeded towards Mode 3. A short time later, on March 20, 2006, the control room supervisor incorrectly concluded that both trains of containment spray were operable and raised reactor coolant system pressure above 385 psia. On March 20, 2006, the class pressurizer heater Train B supply circuit breaker tripped due to a grounded condition on Heater A05, rendering the equipment inoperable. This equipment condition was not recognized by

operations personnel until March 22. As a result of the equipment condition, on March 21, 2006, Unit 1 changed from Mode 4 to Mode 3 without two trains of pressurizer heaters operable. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Requests 2877648, 2877591, and 2878030.

The finding is greater than minor because it is associated with the configuration control cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. For the examples of this finding related to the containment spray system, a Phase 2 analysis was required since they impacted both the mitigating systems and barrier integrity cornerstones as determined by the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet. Using the Phase 2 Worksheets associated with loss of coolant accidents, the finding is determined to have very low safety significance since all remaining mitigation capability was available. The example of this finding related to pressurizer heaters cannot be evaluated by the significance determination process because Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and Appendix G, "Shutdown Operations Significance Determination Process," do not consider the pressurizer heaters as a risk significant function as defined in the risk informed notebook. This finding is determined to be of very low safety significance by NRC management review. The cause of the finding is related to the crosscutting element of human performance in that operations personnel did not follow procedures and apply the necessary rigor and questioning attitude to requirements and associated decisions because of self-imposed schedule pressures.

Inspection Report# : [2006003\(pdf\)](#)

Significance:  Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INOPERABLE INVERTER DUE TO DEGRADED CAPACITORS

A self-revealing noncited violation of Technical Specification 3.8.7, "Inverters - Operating," was identified for the failure to maintain two operable trains of inverters. On October 20, 2005, Inverter 1EPNBN12 failed. The licensee's evaluation determined that procurement engineering personnel did not identify the lack of oil in the output filter capacitors for the inverter. The capacitors were installed in the inverter between October 1999 and October 20, 2005. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2845317.

The finding is greater than minor because it is associated with the equipment performance cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the condition only affected the mitigating systems cornerstone and did not represent an actual loss of safety function.

Inspection Report# : [2006003\(pdf\)](#)

Significance:  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DIESEL FIRE PUMP BATTERY SURVEILLANCE

The inspectors identified a noncited violation of Technical Specification 5.4.1.d for an inadequate surveillance test for the diesel fire pump batteries. Specifically, since 1995, the method described in Procedure 38FT-9FP02, "Fire Protection System Monthly Diesel Fire Battery Test," Revision 4, to verify the specific gravity of the diesel fire pump batteries was inadequate in that the specific gravity was not directly measured, but was verified by a correlation to open circuit voltage. This methodology could result in a measured battery voltage that would be higher than the true specific gravity would provide. The cause was due to an inadequate engineering evaluation to develop the correlation used in the surveillance procedure. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2875906.

The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of mitigating systems cornerstone and affects the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet and Manual Chapter 0609, Appendix F, "Fire Protection

Significance Determination Process," the finding is determined to have very low safety significance because the fire pump battery performance and reliability is minimally affected since the batteries were replaced every two years, and the required capacity of the batteries is approximately 60 percent of a newly installed battery.

Inspection Report# : [2006002\(pdf\)](#)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT AN ADVERSE TREND OF CONTAMINATED OIL SAMPLES

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the failure to correct an adverse trend of contaminated oil samples in a timely manner. Specifically, on April 1, 2005, the licensee identified an increasing trend of incorrect lubricant oil additions and contaminated oil samples and entered the deficiency in their corrective action program. As of January 2006, the inspectors concluded that the corrective actions taken as a result of the identified oil control deficiency were untimely, in that, 9 months later the frequency of new instances of oil control problems documented in the corrective action program remained unchanged. The licensee entered the deficiency into their corrective action program as Condition Report Disposition Request 2785915 for resolution.

The finding is more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because it only affected the mitigating systems cornerstone and did not result in the loss-of-safety function of a single train or system. The cause of the finding is related to the cross-cutting element of problem identification and resolution, in that, poor work practices resulted in multiple oil contamination events and the corrective actions taken were ineffective in promptly correcting the condition. (Section 40A2e(2)(ii))

Inspection Report# : [2006008\(pdf\)](#)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET MAINTENANCE TEST REQUIREMENTS

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified for failure to perform required testing of the Unit 3 essential cooling water system Pump EWP01 breaker in accordance with requirements and acceptance limits. Pump EWP01 breaker test procedure established tolerances and acceptance criteria for the breaker sub-component clearances that were documented as not being met. The licensee entered the deficiency into their corrective action program as Condition Report Disposition Request 2865792 for resolution.

This finding was more than minor since it affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The failure to meet recommended tolerances and acceptance limits specified was similar to Manual Chapter 0612, Appendix E, more than minor example 2.c., in that, the issue was repetitive and affected multiple breakers tested. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition was a qualification deficiency confirmed not to result in loss of function. The cause of the finding is related to the cross-cutting element of human performance in that maintenance personnel failed to properly implement maintenance procedures, and the deficient conditions were not identified by supervisory review of the completed procedures. (Section 40A2e(2)(iii))

Inspection Report# : [2006008\(pdf\)](#)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY AND CORRECT AN ADVERSE CONDITION ASSOCIATED WITH THE BOP-ESFAS SEQUENCER

A noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for failure to

identify and correct the adverse impact of auto-testing on safety-related relays. Specifically, for approximately 100 days, between May 5 and July 14, 2004, and again between May 2 and June 3, 2005, the Unit 1 "A" Balance Of Plant Engineered Safety Feature Actuation System sequencer was placed in continuous auto-test, resulting in degradation of the associated relays. Approximately 3 months later, on October 10, 2005, during testing, the sequencer failed to shed one of the loads as required. The long-term continuous auto-testing was determined to be the most likely cause of the relay failure. The licensee entered the deficiency into their corrective action program as Condition Report Disposition Request 2865792 for resolution.

The finding is greater than minor because it affects the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because the finding did not result in the loss of safety function of any component, train, or system. The cause of the finding is related to the cross-cutting element of problem identification and resolution in that the licensee failed to adequately evaluate and correct a condition adverse to quality. (Section 40A2e(2)(iv))

Inspection Report# : [2006008\(pdf\)](#)

Significance:  Feb 03, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY A MAINTENANCE RULE FUNCTIONAL FAILURE

A noncited violation of 10 CFR 50.65(a)(2) was identified for the failure to demonstrate that the performance or condition of the low pressure safety injection/shutdown cooling Pump 2A was adequate. Specifically, in May 2005, the licensee failed to accurately account for 15 hours of unavailability time for the low pressure safety injection/shutdown cooling Pump 2A, which when re-evaluated, exceeded the performance trigger to enter (a)(1) monitoring. The licensee entered this deficiency into their corrective action program as Condition Report Disposition Request 2865315 for resolution.

The finding is more than minor because it affects the equipment performance attribute of the mitigating systems cornerstone objective to maintain availability and reliability of structures systems and components needed to respond to initiating events and had a credible impact on safety. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because there was no design deficiency and the low pressure safety injection/shutdown cooling Pump 2A failure did not exceed the allowed technical specification outage time. The cause of the finding is related to the cross-cutting element of human performance in that the initial evaluation and subsequent supervisory reviews failed to identify the need for additional monitoring of the low pressure safety injection/shutdown cooling Pump 2A. (Section 40A2e(2)(v))

Inspection Report# : [2006008\(pdf\)](#)

Significance: N/A Feb 03, 2006

Identified By: NRC

Item Type: FIN Finding

PERFORMANCE DECLINE IN PROBLEM IDENTIFICATION AND RESOLUTION

The inspectors reviewed approximately 175 condition reports, 65 work orders, associated root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. Overall, performance declined when compared to the previous problem identification and resolution assessment. Significant delays in evaluation of the significance of an identified problem, as well as identification of appropriate corrective actions, resulted in large corrective action backlogs, some repeat events, and examples of continued noncompliance. The delays in completion of corrective actions continued to result in a significant number of self-disclosing and NRC-identified violations and findings. While the licensee initiated actions to address the substantive cross-cutting issues in human performance and problem identification and resolution, the majority of the corrective actions were not complete and some of the initial completed actions were not effective. Also, competing priorities between resources and the backlog of corrective actions created a condition where many corrective actions were significantly delayed in their completion, contributing to failures to adequately implement the corrective action process.

The team concluded that while a safety-conscious work environment exists at your facility, isolated concerns were raised

by your staff during the interviews. These concerns were associated with not having sufficient personnel to accomplish long-term improvements, a loss of trust that management would not subject the staff to negative consequences for raising issues, some confusion about when to place an adverse condition into your corrective action program, and a decrease in confidence that the corrective action program will adequately address problems. (Section 4OA2).

Inspection Report# : [2006008\(pdf\)](#)

Significance:  Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT AN ADVERSE CONDITION WITH THE REFUELING WATER TANK INSTRUMENT PIT

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to correct a condition adverse to quality involving the refueling water tank instrument pit. Specifically, in August 2003, the licensee inadvertently cancelled the work orders to correct deficiencies associated with flooding of the refueling water tank instrument pit. This error was identified by the licensee in October 2004; however, corrective actions were inadequate to ensure timely correction of the adverse condition. Additionally, two of the three work orders were inappropriately closed with no work performed following the inspectors' identification of the issue in August 2005. After identification by the inspectors, the licensee installed temporary modifications to prevent water intrusion into the pit. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2838845.

The finding is greater than minor because it is associated with the protection against external factors cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding required a Phase 3 analysis by a senior reactor analyst, since the finding was potentially risk significant due to external initiating event core damage sequences. A senior reactor analyst performed a qualitative assessment and concluded that the finding had very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that corrective actions lacked timeliness, adequacy, and thoroughness.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CORRECT AN IDENTIFIED ADVERSE CONDITION ASSOCIATED WITH MAINTENANCE DEPARTMENT GUIDELINES

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to correct a condition adverse to quality involving the use of Maintenance Department Guidelines. Specifically, instrumentation and controls personnel did not complete actions used as a basis for closure for Condition Report/Disposition Request 2715129. In addition, the extent of condition review did not identify the continued active use of Maintenance Department Guidelines to perform quality related activities. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Request 2830633.

The finding is greater than minor because it is associated with the procedure quality cornerstone attribute of the mitigating systems cornerstone and affects the associated cornerstone objective to ensure the reliability and availability of systems that respond to initiating events. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding is determined to have very low safety significance because the finding did not result in the loss of safety function of any component, train, or system. The cause of the finding is related to the crosscutting element of problem identification and resolution in that maintenance personnel did not implement timely corrective actions and performed a poor extent of condition review.

Inspection Report# : [2005005\(pdf\)](#)

Significance: SL-IV Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SUBMIT LER TO REPORT SHUTDOWN REQUIRED BY TECHNICAL SPECIFICATIONS

The inspectors identified a noncited Severity Level IV violation of 10 CFR 50.73 for the failure to submit a licensee event report within 60 days to report the completion of a plant shutdown required by the Technical Specifications. A second similar example of a violation of the same regulation was identified by the licensee. Specifically, the licensee was required to submit a licensee event report by May 17, 2005, to report the completion of a plant shutdown required by the Technical Specifications that occurred on March 18, 2005. This licensee event report was submitted on November 7, 2005. Additionally, the licensee was required to submit a licensee event report by April 10, 2005, to report the completion of a plant shutdown that occurred on February 9, 2005. A revised licensee event report was submitted on January 6, 2006. This issue was entered into the licensee's corrective action program as Condition Report/Disposition Requests 2829976 and 2844019.

The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform this regulatory function was potentially impacted by the licensee's failure to report the event. The finding was determined to be a Severity Level IV violation in accordance with Section D.4 of Supplement I of the NRC Enforcement Policy. The finding is not suitable for evaluation using the significance determination process, but has been reviewed by NRC management and is determined to be a finding of very low safety significance. The cause of the finding is related to the crosscutting element of problem identification and resolution in that the transportability review, conducted by regulatory affairs personnel, failed to identify an additional example of a missed reportable event that was subsequently identified by the NRC.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Dec 16, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

IMPROPER DESIGN CONTROL FOR EMERGENCY CORE COOLING SYSTEM SUMP AND REFUELING WATER TANK SWAPOVER

The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," related to potential air entrainment into the emergency core cooling system suction header from the refueling water tank. Specifically, the inspectors determined that the water level in the refueling water tank could fall below the level of the tank discharge pipe and associated vortex breaker during the transfer from the refueling water tank to the containment sump during design basis accidents. As a result, air could be drawn into the emergency core cooling system piping under accident conditions. This issue was applicable to both trains of all three units. Contrary to proper design control, engineering personnel failed to effectively implement design requirements to prevent potential air entrainment into the emergency core cooling system.

The inspectors considered this finding to be more than minor, in accordance with NRC Manual Chapter 0612, "Power Reactor Inspection Reports," since it potentially affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and it affected the attributes of design and configuration control. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the inspectors determined that the issue was of very low safety significance (Green) because there was no actual loss of safety function. Because the violation was determined to be of very low safety significance and has been entered into the corrective action program as condition report/disposition request (CRDR 2835132), this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy. The inspectors also determined this issue had cross-cutting aspects of human performance. Specifically, the licensee's attention to detail was lacking and there was poor inter- and intra-group coordination.

Inspection Report# : [2005012\(pdf\)](#)

Significance:  Dec 16, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

IMPROPER DESIGN CONTROL FOR REFUELING WATER TANK LEVEL INSTRUMENT CALIBRATION

The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," for failure to translate design basis information into the calibration of refueling water tank level instruments. Without this information, operators were unaware that a Technical Specification listed minimum level in this tank may not provide sufficient usable volume of water for emergency core cooling system operation. Specifically, engineers failed to density compensate these instruments for allowable ranges of both temperature and boric acid concentration of the tank. Contrary to proper design

control, the licensee failed to effectively implement design requirements to ensure operability of the refueling water tank.

This issue was determined to affect the Mitigating Systems cornerstone and was more than minor based upon review of Example 3.j of Manual Chapter 0612, Appendix E. The errors were considered more than a minor calculation error because the deficiencies required re-performance of the calculations, significantly reduced the overall margin, and could be applicable to other such instrumentation calculations. However, engineering personnel demonstrated that while there was a loss of margin, there was no actual loss of function because of the inaccuracies in the RWT level instrument calibrations. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the inspectors determined that the issue was of very low safety significance (Green) because there was no actual loss of safety function. Because the violation was determined to be of very low safety significance and has been entered into the corrective action program as condition report/disposition request (CRDR 2840920), this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy.

Inspection Report# : [2005012\(pdf\)](#)

Significance:  Dec 16, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY IMPLEMENT STATION PROCEDURE FOR EQUIPMENT OPERABILITY (TECHNICAL SPECIFICATION 5.4.1.a)

The inspectors identified three examples of a (Green) noncited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Specifically, these examples involved the licensee's failure to follow a procedure and to provide appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished, consistent with the facility's administrative procedure for the operability determination process. In the first case an engineer evaluated a concern in a condition report/disposition request without notifying the control room so an operability assessment could be performed. In the other cases, there was inadequate guidance given to operators to address when an operability assessment would be required.

The inspectors considered this finding to be more than minor, in accordance with Manual Chapter 0612, since it potentially affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and it affected the attributes of procedure quality and human performance. However, subsequent evaluations completed by the licensee verified that actual safety functions were not lost in any of these examples. The inspectors performed a Phase 1 significance determination, using NRC Manual Chapter 0609, and determined this issue screens out as having very low safety significance (Green) because a safety function was not lost. Because the violation was determined to be of very low safety significance and has been entered into the corrective action program as Condition Report/Disposition Request 2838626, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy. The inspectors also determined this issue had cross-cutting aspects of human performance. Specifically, the licensee's attention to detail was lacking and there was poor inter- and intra-group coordination.

The inspectors identified an additional example of the Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," described in NRC Supplemental Inspection Report 05000528; 05000529; 05000530/2005012, for the failure to establish an adequate procedure and implement existing procedures involving implementation of the operability determination process. The inspectors also identified examples where information provided to operations from engineering was not sufficiently accurate or complete to support operational decision making with respect to capacitor service life and the overall impact of the identified degraded or non-conforming capacitors. On November 1, 2005, the licensee inappropriately determined that the operability determination process was not applicable for a degraded capacitor condition that had the potential to impact Class 1E inverter operability. Consequently, the degraded condition was evaluated outside the operability determination process. Because the finding is of very low safety significance and has been entered into the corrective action program as Condition Report/Disposition Request 2838626. The cause of the finding is related to the crosscutting element of human performance in that communications between the engineering and operations organizations was inadequate.

Inspection Report# : [2005012\(pdf\)](#)

Significance: N/A Dec 16, 2005

Identified By: NRC

Item Type: FIN Finding

SUMMARY FINDING. 95002 INSPECTORS ASSESSMENT OF IR2004-14 SEVERITY LEVEL III VIOLATION FOR 50.59 ISSUE

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection, in part, to assess the licensee's evaluation and corrective actions associated with an inappropriate change to an emergency core cooling system procedure without prior NRC approval. This procedure change rendered portions of the system inoperable because of voiding. This performance issue was previously characterized as a Severity Level III violation of 10 CFR 50.59 and was originally identified in NRC Inspection Report 05000528; 529; 530/2004014. During this supplemental inspection, performed in accordance with Inspection Procedure 95002, the inspectors determined that the licensee's evaluation identified the primary root causes of the performance issue to be: (1) The site procedure revision process (01AC-0AP02) was inadequate, in that, the procedure allowed 'pre-screening' of changes that could potentially bypass performing a 10 CFR 50.59 screening for changes to the facility as described in the licensing basis; and (2) The corrective action program implementation was ineffective. The licensee also identified overlap and interface problems between the corrective action program, the engineering evaluation request program, and the instruction change request program. These issues, in conjunction with inadequate training to recognize a corrective action condition, contributed to the failure of station personnel to initiate a corrective action program input document in 1992 for the potential pipe voiding concern. The inspectors concluded that the licensee's evaluation and implemented corrective actions were appropriate to reasonably prevent repetition of the 10 CFR 50.59 violation.

Given the licensee's acceptable performance in addressing the inappropriate procedure change and 10 CFR 50.59 program deficiencies, the Severity Level III violation is closed.

Inspection Report# : [2005012\(pdf\)](#)

Significance: N/A Dec 16, 2005

Identified By: NRC

Item Type: FIN Finding

SUMMARY FINDING. 95002 INSPECTORS ASSESSMENT OF IR2004-14 (YELLOW) 10CFR50, APP B, CRITERION III VIOLATION

The NRC performed this supplemental inspection, in part, to assess the licensee's evaluation and corrective actions associated with potential air entrainment into the emergency core cooling system. The licensee failed to incorporate original design requirements into the plant to maintain piping between the containment sump isolation valves filled with water. This performance issue was previously characterized as a 10 CFR 50, Appendix B, Criterion III, violation having substantial safety significance (Yellow), and was originally identified in NRC Inspection Report 05000528; 529; 530/2004014. The inspectors determined that the licensee's evaluation identified a direct cause, nine root causes, and nine contributing causes of the performance issue. The evaluation was also used to develop an extensive list of corrective actions. The inspectors found the licensee's methods of evaluation to be appropriate.

The NRC concluded that, while the licensee performed an adequate root cause evaluation of the Design Control violation, certain corrective actions were incomplete at the time of this inspection. Specifically, the team determined that for each of the root and contributing causes, not all corrective actions were sufficiently developed to ensure that the identified performance deficiencies were adequately addressed. In addition, some of the corrective actions were narrowly focused, or the implementation of those actions was not fully effective. Also, the team concluded that criteria and reviews were not established, for auditing or followup, to ensure that corrective actions were effective in improving performance in the affected areas. Consequently, the team did not have assurance that the planned corrective actions were sufficient to address the causes for the performance deficiencies associated with the violation. Therefore, the (Yellow) violation (VIO 2004/014-01) will remain open for further NRC review.

Inspection Report# : [2005012\(pdf\)](#)

Significance:  Mar 16, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO TRACK CONTROL ROOM DISCREPANCIES

The inspectors identified a finding for the failure to follow administrative guidelines provided to operations personnel for identifying, documenting, and tracking main control room deficiencies. Specifically, approximately 75 control room instrument and control room meter face plates in Units 1, 2, and 3 were degraded and were not individually tracked in the

control room discrepancy log. Furthermore, discrepancy labels containing the control room discrepancy log number and description of the discrepancy were not placed adjacent to or as close as possible to each affected device. This issue was entered into the corrective action program as Condition Report/Disposition Request 2782501.

The finding is determined to be greater than minor because if left uncorrected, it could become a more significant safety concern in that the condition could cause an operator to take an inappropriate action based on expected plant response or conversely cause an operator not to take action when action is required. The senior reactor analyst determined that this finding was not appropriate to be evaluated using the significance determination process since this finding was associated with multiple human performance actions. Based on management review, the finding is determined to have very low safety significance because it only affected the mitigating systems cornerstone, and there was no adverse impact to plant equipment.

Inspection Report# : [2005002\(pdf\)](#)

Significance:  Dec 09, 2004

Identified By: NRC

Item Type: VIO Violation

FAILURE TO MAINTAIN DESIGN CONTROL OF CONTAINMENT SUMP RECIRCULATION PIPING

The team identified an apparent violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to establish measures to assure design basis information was translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to maintain the safety injection sump suction piping full of water in accordance with the Updated Final Safety Analysis Report. This nonconformance had the potential to significantly affect the available net positive suction head described in the Updated Final Safety Analysis Report for the high pressure safety injection and containment spray pumps, since the analysis assumed the piping would be maintained full of water.

{NOTE: Finding remains open - IP 95002 results pending 12/16/2005}

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. The NRC assessed this finding through Phase 3 of the Significance Determination Process and made a preliminary determination that the issue had substantial safety significance (Yellow). After considering the information developed during the inspection and the results of testing sponsored by the licensee, the NRC has concluded that this inspection finding is appropriately characterized as Yellow. The final Significance Determination Process letter was issued on April 8, 2005. This issue will be inspected within the scope of a supplemental 95002 inspection in August - September, 2005.

Inspection Report# : [2004014\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Significance:  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO TRAIN EMERGENCY RESPONSE PERSONNEL

The inspector identified a noncited violation of 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E, IV(F)(1), for the failure to provide requalification training during 2005 to Arizona Public Service Corporate Public Information personnel as required by Procedure EPIP 59, "Emergency Planning Training Program Description." This failure resulted in none of the Corporate Spokespersons receiving requalification training, which could have impaired their ability to effectively communicate emergency information to the public.

This finding is greater than minor because it (1) had a credible impact on the Emergency Preparedness cornerstone objective, (2) involved the ability to implement adequate measures to protect the health and safety of the public during an emergency, and (3) impacted the cornerstone attributes of Emergency Response Organization readiness and performance. The finding is of very low safety significance because the Corporate Spokesperson is not a key emergency responder as defined by NEI 99-02, "Regulatory Assessment Indicator Guideline," and the untrained personnel would be relied upon to perform their response function during an emergency. This finding is a noncited violation of 10 CFR 50.47(b)(15). The licensee has entered this issue into their corrective action system as Condition Report Disposition Request 2863948. This finding has crosscutting aspects related to problem identification and resolution because if the licensee had properly evaluated Condition Report Disposition Request 2667913 the problems with the content and documentation of annual briefings conducted by the APS Corporate Public Information Department could have been identified and resolved prior to January 2006.

Inspection Report# : [2006002\(pdf\)](#)

Occupational Radiation Safety

Significance:  Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW RADIATION EXPOSURE PERMIT INSTRUCTIONS

The inspector reviewed a self-revealing, noncited violation of Technical Specification 5.4.1.a, resulting from two radiation workers' failure to follow radiation exposure permit instructions. On November 22, 2005, two radiation workers, without notifying radiation protection staff, used a pneumatic grinder with a wire wheel inside of the Unit-1 Steam Generator No. 2 cold leg pipe. As a result of the wire wheel grinding, both workers were contaminated. Radiation protection staff members were not made aware of the contamination event until the workers alarmed the PM-7 portal monitor upon attempting egress from the 140-foot radiological controlled area. One worker received unplanned and unintended internal dose of 6 millirem. The other worker did not receive an internal dose. As corrective action, the licensee counseled the two workers and their supervision, and informed the contractor's management.

The finding was greater than minor because it was associated with one of the cornerstone attributes (exposure control) and the finding affected the occupational radiation safety cornerstone objective, in that a failure to follow radiation exposure permit instructions resulted in additional radiation dose. The inspector determined that the finding had no more than very low safety significance because: (1) it did not involve an ALARA finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise the licensee's ability to assess dose. The finding also had crosscutting aspects related to human performance, in that, radiation workers failed to follow the radiation exposure permit instructions, which directly resulted in the finding.

Inspection Report# : [2006002\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Last modified : December 21, 2006