ARKANSAS NUCLEAR ONE - UNIT-1 AND COMMON
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10CFR50.59 REPORT FOR 1996

This report contains a brief description of changes in procedures and in the facility as described in the Safety Analysis Report (SAR), tests and experiments conducted which were not described in the SAR, and other changes to the SAR for which a safety analysis was conducted. The report also contains a summary of the safety evaluation for each change. Included with this summary report are those evaluations that were common to both ANO-1 and ANO-2. This report is applicable for the period from April 1, 1995 through October 25, 1996.

The safety evaluations included in this report were performed in accordance with 10CFR50.59 and determined that none of the changes involved an unreviewed safety question.

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SECTION I

PROCEDURE CHANGES

Procedure Control

Revision 44 to Procedure 1000.006 incorporated several administrative changes to add clarity and also deleted the multiple procedure change process which was used to make an identical change to several procedures.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes were administrative in nature, did not involve any type of previously analyzed accident, and did not impact any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change was administrative in nature and did not impact equipment or operation of the plant; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change did not affect the operation of the plant and did not affect the intent of the procedure that was changed.

ANO-1 PROC: 1010.010 Revision 0

Transient Cycle Logging and Reporting

Procedure 1010.002, Transient Cycle Logging and Reporting, was revised and split into two unit specific procedures. This change was administrative only.

Affected SAR Tables: 4-15, 4-20, 4-21, 4-21A, 4-8

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these procedure changes will tend to reduce the probability of component failures which could lead to an accident; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes did not create any new modes of failure and were administrative in nature; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since these procedure changes reduce the probability of component failure, thereby insuring that the margin of safety as defined in the basis for any Technical Specification is not reduced.

ANO-1 PROC: 1052.022 Revision 2

Radiological Effluents and Environmental Monitoring Program

Procedure 1052.022 was revised to change the location of the offsite environmental sample analysis from AP&L Environmental Services Lab to a designated qualified environmental service lab. Letters of agreement for these services were issued by the chemistry department and included provisions for both routine and emergency sample media analysis. The designated lab is required to meet quality assurance and ANO Technical Specification requirements. This change did not represent an intent change or degradation of analysis capabilities and did not decrease the effectiveness of the Emergency Plan.

Affected SAR Table: 7-11A

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since there are no accidents which could be initiated by change in the offsite location for performing environmental sample analyses and the designated laboratory is a qualified environmental laboratory capable of meeting the requirements of ANO's Radiological Environmental Monitoring Program; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since changing the location of the laboratory which performs environmental sample analyses could not create any accidents and could not impact the function of equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the designiated laboratory is a qualified laboratory capable of meeting Technical Specification requirements.

Filling and Draining the Fuel Transfer Canal

This change allows pumping the Incore instrument tank to the Borated Water Storage Tank using the Spent Fuel Cooling pump rather than allowing it to completely drain through the instrument guide tubes into the reactor vessel.

Affected SAR Section: 9.6.2.2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change did not affect any factors credited with initiating or mitigating any of the previously analyzed accident scenarios and did not adversely affect any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this activity did not create any new modes of failure and the design and operation of equipment important to safety were not affected by this change; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

Fuel Transfer Canal Fill and Drain

This procedure revision was made to allow filling of the fuel transfer canal with the Decay Heat Removal (DHR) System. This change alters the system which will inject borated water into the Reactor Coolant System transfer canal, but does not alter the source of that water. This change did not affect system performance or reliability since this function is within component design.

Affected SAR Sections: 9.5.2.1, 9.6.2.2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this activity was not credited with initiating an accident, this change does not prohibit injection of borated water into the reactor vessel, and all equipment involved in this change will be used within the limits for which it was designed; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not alter the function of any system and this activity remained bounded by previously evaluated accidents; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this activity will not remove the required DHR loop from operation and will not affect its capability to circulate coolant.

This procedure revision addressed the addition of Appendix D which allows two systems to be cross connected. Appendix D detail is necessary to prevent possible contaminated water in the Clean Waste System from entering the Service Air System by the addition of numerous checks, and the installation of a reverse flow ball check valve, flow regulator, flow indicator, vent valve, fitting, and hoses.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since, due to the procedural controls in place for the air sparging process and the extended time interval required for a T-12 or T-18 tank to pressurize, a rupture of either tank resulting from the air sparging process is almost impossible and this process does not affect any safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this procedural change remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PROC: 1105.005 R 19; 1203.001 R 5; 1015.015 R 18; 1305.007 R 21

Emergency Feedwater Initiation and Control

These procedure revisions changed the normal position of the Atmospheric Dump Valves (ADVs) from automatic to hand. The ADVs are provided for optional pressure relief to enable heat removal from the Reactor Coolant System by dumping steam to atmosphere when the circulating water system is not available. The function of the ADVs was unaffected by this change in configuration.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the ADVs were not evaluated as an initiator, operation of the ADV in hand would result in the same consequences as if operated in automatic, and the function of the ADVs and their impact on equipment important to safety was unaffected by this configuration; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the design and operation of equipment important to safety were unaffected by this change; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the applicable margins of safety were unaffected by operation of the ADVs in either automatic or hand.

ANO PROC: 1302.025 Revision 2

Radiation Monitoring Requirements for Loading and Storage of the Ventilated Storage Cask

The Spent Fuel Removal and Dry Storage procedure was revised to incorporate lessons learned from practice exercises. The changes incorporated the ability to drain the Multi-assembly Sealed Basket (MSB) prior to decontamination of the MSB Transfer Cask (MTC) and the allowance for maintaining MTC/MSB gap flow until the lid welds are complete. Other changes included the addition of various references, details such as housekeeping requirements, time clock monitoring, water temperature surveillance requirements, rearrangement of various steps, personnel requirements for train escort and engine shutdown, and details for placement of the MSB back in the cask loading pit.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the increase in personnel exposure by allowing the decontamination of the MTC to occur at a time when the fuel has less shielding is considered insignificant and will lower the amount of MSB surface contamination available for dispersal once it is placed in the Ventilated Storage Cask; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since none of these changes affected the function of the MTC to provide shielding for the MSB during loading operations; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this procedure provides for compliance with the Conditions of System Use.

This procedure change allows for the circulation of helium or nitrogen through a sealed Multi-assembly Sealed Basket (MSB) to remove moisture from the cask following the initial drain down after performing the shield lid and structural lid welds. It also allows lowering the water level in the Cask Loading Pit (CLP) prior to lifting the Multi-assembly Sealed Basket Transfer Cask (MTC)/MSB. This change will facilitate decontaminaton of the MTC exterior and MTC/MSB gap prior to removing the loaded and sealed cask from the CLP.

This change affected Section 8.1(3)5 of the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change did not reduce the margin to structural failure, decrease the effectiveness of the MSB containment capability, or increase the possibility of failure of any other of the safety related VSC components and pressurization of the MSB to or beyond the SAR accident discussion is prevented during the purging operation by administratively limiting the maximum cask pressure to less than 10 psi; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the use of helium or nitrogen to remove moisture from the MSB interior is similar in operation and results to the previous steps in the procedure in which the cask was flooded with helium, evacuated, and then reflooded with helium; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change did not affect any bases in the Conditions of System Use and did not make any changes in how the MSB is loaded, sealed, transported, or stored.

ANO PROC: 1402.230 Revision 0

Ventilated Concrete Cask Rail Car Hydraulic Jacking and Air Transporter Operation

This procedure provided operating instructions for hydraulic jacking of the Ventilated Concrete Cask (VCC) rail car and the VCC. It also provided instructions for movement of the VCC using the air transporter and hydraulic jacks instead of a hydraulic roller skid.

This change affects Sections 1.2, 3.1, and 11.1 of the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since neither the VCC rail car nor the air transporter will raise the VCC to a height greater than previously evaluated for the truck trailer or hydraulic roller skid and the equipment used to transport the VCC is not considered important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the revised transportation methods are equivalent to the ones initially discussed in the VSC SAR, thus there is no negative effect on the movement of the VSC and no malfunction of equipment important to safety different than those previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the highest possible drop using the air transporter to remove a VCC from the rail car is approximately 24 inches, equivalent to the highest lift of the VCC described in the VSC SAR using the truck trailor.

ANO PROC: 1601.200 REV. 2 PC-1

Personnel Processing/Records

This change to Procedure 1601.200, Personnel Processing/Records, removed the requirement for exit whole body counts. In accordance with 10CFR20.1502(b)(1), monitoring for intake of radioactive material is not required if workers are not expected to exceed 10% of the applicable Annual Limit on Intake (ALI) for radioisotopes listed in 10CFR20 Appendix B, Table 1. This activity will provide a screening process to identify personnel for performance of whole body counting prior to initial issue of dosimetry. This process will employ a monitoring system and criteria which will identify those personnel having greater than or equal to one percent ALI as meeting the criteria for whole body counting analysis. Those personnel not meeting this criteria will be allowed issue of dosimetry and access to the radiologically controlled areas.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the method and frequency of performing whole body counting was not credited with initiating or mitigating any of the previously evaluated accidents and the whole body counter equipment does not interface with any equipment related to plant safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the whole body counters are not directly or indirectly connected or interrelated to any plant system required to ensure integrity of the reactor coolant pressure boundary or safe shutdown capability; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specifications did not contain limits or safety margins which reference the performance or results of whole body counting and the results of whole body counting are not used as factors for determination of safety margins related to or influenced by equipment important to safety.

Reactor Coolant System Sampling

This drawing revision corrected a discrepancy for the configuration of the Makeup Tank Gas Space Sample Container Bypass Valve, ABV-8A, and the associated pressure indicator. The position of the valve as shown on the drawing indicated that the valve was to be used to isolate the makeup tank gas space sample container bypass line during sampling. The physical location of the valve actually isolates both the bypass line and the sample return line.

Affected SAR Figure: 9-5

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the valve's purpose is only to reroute or isolate sample flow. Leakage due to the failure of either the valve or the pressure indicator would be directed to the primary sample hood or to the makeup tank vents where the effluent would be monitored or contained; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not impact any equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases that could be affected by this change.

Emergency Communications

Procedure 1903.014 was deleted and the information was transferred to Procedure 1903.068 "Emergency Response Center-Emergency News Center." Procedure 1903.068 was created to consolidate all functions, documents, and forms dealing with emergency communication into one procedure for simplification, easy reference, and a single location. Also, functions which at one time were performed by AP&L Little Rock Corporate Personnel, and have been in transition to ANO since consolidation, have been transferred to the Corporate Emergency Center at Echelon.

This change affects Emergency Plan Appendix III

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the affected procedures do not impact safety equipment and can have no affect on the overall safety system equipment performance or reliabilty; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since there was no interaction between safety equipment and the affected procedures; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

SECTION II

DESIGN CHANGES

ANO-1 DCP: 84-1002

Intermediate Cooling Water Isolation Valves

This design change altered the function of the Intermediate Cooling Water (ICW) isolation valves from a double acting, open/close valve to a close only function and eliminated the ability of the actuator to open the valve. Air is only available to the top side of the actuator cylinder upon an Engineered Safeguards isolation signal or a signal from the control room. This change was made to address a problem with the previous configuration for double acting actuators in that the energy stored in the accumulators used to provide closure capability on loss of Instrument Air may unknowingly be used up by cycling the valve after a loss of Instrument Air. The new configuration was designed to provide a situation more like the spring loaded actuator in that the energy stored in the accumulator can only be used to close the isolation valve.

Affected SAR Section: 9.9.2.3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since eliminating the open function of the valves simplified the capability of the valves to perform in a safe mode and decreased the probability of functional error or operator error during an accident condition; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no new conditions were introduced that could create the possibility of an accident type other than previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases related to the ICW containment isolation valves.

ANO-1 DCP: 91-1007

Rolling Fire Door Replacement

This design change package replaced the rolling fire door mounted below Hatch 483 inside the Auxiliary Building with a hatch cover. The hatch cover is a sandwich type, fire resistant shield plug insert mounted in the concrete slab. The hatch was constructed from Promat-H, fibrous, fire resistant materials and was fitted with lifting eye bolts to facilitate removal and replacement.

This change affects FHA Figure FP-105 and Zones 4-EE and 20Y

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not change any operating requirements, controls, pressure retaining requirements/boundaries, or safety functions assumed in the cause, occurrence, or mitigation of any accidents postulated in the SAR and did not affect any safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not introduce any new modes of failure for equipment important to safety and the hatch is non-Q and passive in its functioning orientation; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the hatch cover is capable of withstanding a fire in excess of three hours, thereby increasing the margin of safety.

ANO-1 DCP: 92-2001

Dry Fuel Storage

This design change installed a Ventilated Storage Cask (VSC) System consisting of dry steel containers with welded caps contained in concrete casks for shielding and tornado missile protection. The loaded concrete casks will be placed on a concrete pad within the ANO protected area in an Independent Spent Fuel Storage Installation (ISFSI) area designed to store up to 624 fuel assemblies in 26 casks, 24 assemblies per cask. If needed, the storage pad size within the ISFSI area can be increased to accommodate up to an additional 46 casks.

Affected SAR Sections: 1.7.5, 11.3.1.1, 5.1.5, 9, 9.12, 9.3.2.1, 9.4, 9.4.2.1.1, 9.4.2.2, 9.6.1.3.A, 9.6.1.7.1, 9.6.2.3, 9.6.2.4.2, 9.6.2.4.3.1, 9.6.2.6

Tables: 1-3, 9-14, 9-14A, 9-9

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the probability of a cask drop was not increased by the use of the VSC system, the increase in dose consequences was unchanged, and the probability of a malfunction of equipment important to safety resulting from a cask drop did not increase; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the load path of the crane and the fuel cask is well defined, all safety related equipment and structures in the path have been identified and evaluated for a cask drop, and the safety related equipment and structures in areas away from the drop are qualified for seismic shock; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the only Technical Specification related to spent fuel cask loading or transport in the Auxillary Building related to heavy loads was deleted in Amendment 173.

ANO-1 DCP: 93-1013

MFPT Control System Trip Hardening

This modification incorporated changes to reduce the vulnerability of the Main Feedwater Pump Turbine (MFPT) Control System to environmental effects such as EMI/RFI noise, high ambient temperature, and vibration and to trip harden the system against component malfunction. It also made improvements to display and data acquisition performance. As part of the trip hardening modifications, a "Low Control Oil Pressure" pump trip was added. This change will initiate a pump trip if a system malfunction causing low control oil pressure reduces Main Feedwater Pump (MFP) speed to where it is no longer pumping. It is preferred, in this case, that the MFP be tripped and the Integrated Control System and acticipatory actions such as pressurizer spray, reactor power reduction, and block valve delay be used to run back the plant with the remaining pump without Reactor Cooling System undercooling.

Affected SAR Figures: 9-14, 10-2
Sections: 7.2.3.2.4, 7.2.3.2.5, 10.4.7

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes had no nagative impact on any of the accidents analyzed in the SAR and did not change any plant equipment or any functions of equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no new failure modes of the MFPT controls or other equipment added by this modification were introduced that would result in any other initial conditions or failure sequences that might invalidate limiting conditions serving as design bases for safety systems; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since none of the Technical Specification bases were affected by any of these modifications.

ANO-1 DCP: 93-2020

Controlled Access Modifications

This design change package remodeled the Unit 1 controlled access and nurse's areas. This modification consisted of removing all interior block walls on the controlled access egress location on elevation '354 and relocating the nurse's station to the maintenance facility. Communication cabinets were relocated, the radiological controlled area was moved, and the size of the area was increased. A new counter was installed in the area allowing the technicians a better work area to more effectively monitor equipment/materials removed from controlled access areas.

Affected SAR Figures: 1-3, 11-8, A-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not affect any operating requirements, controls, pressure retaining requirements or boundaries, or safety functions assumed in the cause, occurrence, or mitigation of the accidents postulated in the SAR; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not affect any design, construction, or operating assumptions used to develop the accidents evaluated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there are no specific margins of safety associated with this modification defined in the Technical Specifications bases.

ANO-1 DCP: 94-1001

Replacement of the High Pressure Feedwater Heaters

This design change replaced the High Pressure (HP) feedwater heaters, including heater insulation replacement, separator line cutting and capping, level instrumentation and piping replacement, heater vent, drain, and test connection additions, and the removal of abandoned Startup Boiler piping.

Affected SAR Figure: 7-22

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since no new failure mechanisms were introduced by the replacement of the HP feedwater heaters, this change did not affect the capability of any equipment to mitigate the consequences of an accident, and replacement of the degraded feedwater heaters and associated equipment reduced the potential for failure; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not adversely impact any equipment important to safety and no new failure modes were created that could increase the possibility of a malfunction of a different type than any previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this modification did not affect the capabilities or requirements of the Emergency Feedwater System.

ANO-1 DCP: 94-1002

Turbine Supervisory Instrumentation System

This design change replaced the Main Turbine Supervisory Instrumentation System (TSIS) and the associated Control Room indication with a new Bently-Nevada 3300/3500 Series TSIS with associated InTouch-based touchscreen man-machine interfaces. This system also supplied new advanced turbine diagnostic and analysis software and hardware which incorporated the existing Reactor Coolant Pump Vibration Monitoring System data.

Affected SAR Figures: 1-3, 10-2, A-2
Section: 10.1.1.A.5

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not add any electrical or physical interfaces with equipment credited with initiating an accident, did not affect the operatility or performance of any equipment required to mitigate accidents, and did not interface with any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not affect any accidents, or associated consequences, previously evaluated in the SAR and did not create any new modes of failure; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the equipment affected by this modification was not mentioned in any Technical Specification bases.

ANO-1 DCP: 94-1003

Main Feedwater Venturi Replacement

This design change replaced the Badger Meter Low Flow Tube located in the Main Feedwater (MFW) System with a Permutit venturi designed to eliminate high thermal fatigue stresses. The new meter is configured in a venturi assembly made up of pipe, venturi, and a flow straightener and will improve the measurement accuracy of the MFW flow. The new venturi was designed per the requirements of ASME, Fluid Meters, Sixth Edition with some additional requirements of the ASME PTC-6 code and is specified to be accurate within 0.25%.

Affected SAR Figure: 7-22

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since installation of the new venturi did not change the interface between the existing venturi and the plant controls and reduced the potential for a venturi failure due to cracking of welds as a result of thermal fatigue; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the venturi and flow straightener is not safety related and failures of either would not cause the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the new venturi did not reduce the margin between the maximum allowable thermal power production and the actual power produced.

ANO-1 DCP: 94-1010

Inadequate Core Cooling Monitoring and Display System Upgrade

This design change replaced portions of the Inadequate Core Cooling Monitoring and Display System (ICCMDS) with an upgraded ICCMDS which performs all of the required monitoring and display functions. The upgraded ICCMDS was designed to comply with all applicable regulatory and plant requirements which governed the design of the systems it replaced. In addition, the design modification incorporated a number of system enhancements to improve system functionality and reliability, including the ability to interface with the Plant Monitoring System, changes to related alarm window logic, and implementation of mode selection capability.

Affected SAR Figures: 4-1, 7-20, 8-1
Section: 4.2.3.7
Tables: 7-11, 7-11A

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the systems and components affected by this modification were not credited with initiating any of the evaluated accidents in the SAR, the superior design of the system resulted in improved monitoring and display of required system parameters, and the critical parameters, functionality, and reliability of the new system's hardware and software components were comparable or superior to those of the previous system; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since there were no new conditions or plant operating practices resulting from this modification that could cause a new or different type accident than those already evaluated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the upgraded ICCMDS was designed to meet or exceed all necessary requirements for functionality, reliability, redundancy, and operability of the systems that were replaced.

ANO-1 DCP: 95-1011

Main Generator Monitoring

This design change added three points to the Plant Computer to allow for continuous performance monitoring and trending of (a) the Generator Condition Monitoring which detects overheating in the generator; (b) the Radio Frequency Monitoring which detects abnormal RF emissions in the generator; and (c) the Generator End Turn Vibration Monitoring which detects vibration in the stator end windings. An alarm module was also added to the Generator Condition Monitor loop to provide the control necessary to automatically insert a filter into the hydrogen line. The module will allow the unit to determine if an alarm is genuine. It also provides two alarms to the Plant Computer and will retransmit the current signal produced by the Generator Condition Monitor. The main chassis in the Fiber Optic Vibration Monitoring System was upgraded to a newer model to allow autocalibration of the system.

Affected SAR Figure: 9-9

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since no credit was taken for any of the measured parameters affected by this modification and this change did not alter the function of any equipment related to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since all system designs for equipment important to safety remained unchanged; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 DCP: 95-1015

Atmospheric Dump Valve Replacement

This design change replaced Atmospheric Dump Valves (ADVs), CV-2618 and CV-2668, with new valves of a more reliable design. The new valves were physically relocated to a new platform to improve access for manual operation and maintenance. The new valves are a straight globe valve instead of the angle globe design of the old valves. This modification made no functional change to the system for normal operation. Minor changes included the replacement of steam traps, the removal of two vent valves and one drain valve, and the addition of a spectacle flange in the nitrogen supply to the main steam lines. The quality classification of the new valves was also changed by this modification. The old valves were Q-passive for the purpose of maintaining the secondary system pressure boundary. The new valves were downgraded to "S" since the ADV block valves are normally closed, thereby fulfilling the function of maintaining the secondary pressure boundary.

Affected SAR Figures: 10-2, 7-22, A-10, A-11, A-12, A-13, A-7, A-7A, A-7B, A-8, A-8A

Sections: A.2, A.3, A.7, A.7.1, A.7.1.11, A.7.1.2, A.7.1.21, A.7.1.3, A.7.1.4.3, A.7.1.4.4, A.7.1.5.2, A.7.1.5.5, A.7.2.1.1

Tables: 1-2, A-1, A-1A, A-2, A-2A, A-3, A-4, A-5

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the new valves improved the reliability of the ADVs, making them better able to fulfill their function and this modification did not adversely affect any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not change the function of the valves and did not introduce the possibiity of any new malfunction of equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not define a margin of safety related to the atmospheric dump system.

ANO-1 LCP: 92-5034

Service Water Pump Wetends Replacement

This limited change replaced the Service Water (SW) pump wetends, consisting of the suction bell, impeller housings, diffuser case, impellers and associated bearings, linings, sleeves, shafting, wear rings, flanges, and bolts. The changes were a result of ANO's effort to improve the pump's maintenance and reliability.

Affected SAR Figure: 9-21

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since replacement of the pump wetends did not affect any assumptions made in previously evaluated accidents and did not degrade the reliability of any system, structure, or component by imposing additional unanalyzed loads, modifying systems or equipment, or degrading any support system necessary for reliable operation of equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this improvement did not change the function or failure modes of any component, system, or structure of the SW System and this modification remained bounded by previously evaluated accidents; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this modification resulted in hydraulic increase in head and flow, thereby increasing the margin of safety.

ANO-1 LCP: 93-5041

Main Generator Gas Temperature Recorder Replacement

This limited change replaced the main generator temperature recorder and alarm processor, manufactured by Leeds and Northrop (L&N), with a Westronics Series 3000 recorder. The replaced recorder failed and would not provide accurate temperature monitoring in the control room. Spare parts and a like-for-like recorder were not available. The new recorder was installed in the same location as the L&N recorder in Vertical Control Board, C11.

Affected SAR Figure: 9-9

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the equipment affected by this modification was not credited as an initiator or mitigator of any previously analyzed accident and the installation of this new recorder did not affect any safety related equipment or any equpment required for the safe shutdown of the unit; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the installation of the new recorder did not change the failure modes of any equipment and the modification remained bounded by existing analyses; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 LCP: 94-5032

Control Cabinet C24 and C25 Recorders

This limited change replaced six obsolete recorders associated with the Radiation Monitoring System with one new programmable Westronics 3200 Series multi-point recorder. Only those signals which require permanent retention, as required by Regulatory Guide 1.97 and 10CFR20, will be trended on the new recorder. All other data will be available on the plant computer which has more flexible trending capabilities. The signals that were added to the new recorder will also provide data to the plant computer. This change also removed previously abandoned in place radiation monitoring equipment from Control Room Cabinets C24 and C25.

Affected SAR Figures: 11-1, 5-7, 6-10, 7-22, 9-10, 9-3
Section: 5.1.2.1.2
Tables: 11-7, 7-11A

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since no credit was taken for radiation recording in the accident analyses, all radioactive releases to the atmosphere will continue to be monitored and recorded as credited in the current analysis, and this modification did not alter the function of any equipment related to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since all system designs for equipment important to safety remained unaltered, the criteria for electrical isolation was maintained, and conservative adherence to seismic requirements was observed to insure compliance; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 LCP: 94-5033

Replacement of Protamatic Releases

This limited change removed the Grinnell Protomatic releases, pneumatic detectors, detector tubing, local water motor gongs, and instrument air components associated with the deluge/flooding valves for the turbine lube oil, the hydrogen seal oil, and the lube oil reservoirs. New Fenwal Detect-A-Fire rate compensated heat detectors were installed in each of the mounting boxes utilized by the old pneumatic detectors.

Affected SAR Figures: 9-14, 9-16

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the Fire Protection System was not evaluated as an initiator and the system was designed so that pipe rupture or inadvertent operation would not cause the loss of function of plant structures, systems, or components important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since inadvertent actuation or failure of the turbine building Fire Protection System to actuate would not create an accident scenario outside the bounds of those accidents already evaluated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not define a margin of safety for the portions of the Fire Protection System modified by this change.

ANO-1 LCP: 957058L101

Replacement of Fire Water System Control Valves in the Reactor Building

This limited change replaced four preaction fire water control valves located at elevation 360' in the Reactor Building with flow switches. The modification converted the normally dry pipe systems to a wet pipe configuration which will be flooded with water up to the sprinkler heads. This change installed a section of two inch riser pipe approximately three feet long with a tee for each system. The tee reduces to a one inch pipe with a valve for testing purposes.

Affected SAR Figure: 9-16
Sections: 9.8.2, 9D.3.5

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the Fire Water System was not eveluated as an accident initiator, conversion of the preaction system to a wet pipe system did not degrade the system's capability to mitigate accidents, and this modification did not adversely affect any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not impact the system's ability to perform its intended function and did not introduce any new modes of failure; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 85-3698

Service Water Piping Discharge Bar Grating

This plant change installed a security bar grating barrier over the service water discharge pipe at the emergency cooling pond. The grating open area far exceeds the discharge pipe area and does not impede service water discharge flow at the emergency cooling pond.

Affected SAR Figure: 9-34

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the grating open area far exceeds the discharge pipe area and does not restrict service water discharge flow and flow from the piping will push any debris away from the grating; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since installation of the bar grating over the service water discharge will prevent intrusion into the plant and the passive nature of the grating does not create any possibility of a malfunction of equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the grating installation over the service water discharge piping has no impact on flow rates.

ANO-1 PC: 90-1010

Replacement of Obsolete Transmitters on the Reactor Coolant Pump Loops

This design change replaced obsolete Bailey differential pressure transmitters and Brooks rotameter transmitters used in the Reactor Coolant Pump (RCP) loops with Johnson Yokogawa Smart Line transmitters. The new transmitters provide startup feedwater flow indication, let down flow indication, RCP seal water flow indication, RCP total seal flow indication, make up tank level indication, and controlled bleed off flow indication from the RCP seals. The use of Smart Line transmitters will increase reliability, decrease maintenance time, and decrease personnel radiation exposure.

Affected SAR Figures: 7-22, 9-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the new transmitters were specified for the process conditions and constructed of materials compatible with their intended application, this modification did not make any significant changes to processes, controls, safety related equipment, structures, or Class 1E electrical power, no new equipment important to safety was introduced or removed, and none of the changes resulted in increased seismic concerns to safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since there were no changes to the processes or modes of operation of any equipment intended to prevent or mitigate an accident and this modification remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since no margins of safety, as defined in the Technical Specification bases, were impacted by this modification.

ANO-1 PC: 93-7093

Removal of Emergency Diesel Generator Fuel Oil Sample Valves

This plant change removed two Emergency Diesel Generator (EDG) fuel oil sample valves. These valves were removed due to their non-qualification, the pipe configuration at the tees, and the fact that they were no longer used for sampling. The valves, which were suspended off the tees with no structural support nearby, allowed for significant torsional stress from individuals grasping or holding on to the valves or associated sample lines. The operability and reliability of the EDGs were not affected by this modification.

Affected SAR Figure: 8-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since replacing the threaded valves with threaded caps did not adversely affect the pressure boundary capability of the lines; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since replacing the valves with caps enhanced the pressure boundary safety function; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not contain any margins of safety that were affected by the removal of these sample valves.

ANO-1 PC: 94-7053

Cask Loading Pit Sump Pump Removal

This plant change removed the cask loading pit sump pump and its associated piping, electrical power, and valves, to provide clear access to the cask loading pit for the new spent fuel dry storage casks. The piping was sealed with a blank flange at the plane of the cask loading pit liner plate. The original intent of the equipment was to drain and fill the cask loading pit in support of permanent removal of spent fuel from the spent fuel pool. This function will now be performed by the use of a portable pump.

Affected SAR Figures: 1-5, 9-11, A-4
Section: 9.4.2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the equipment removed by this modification was not credited with initiating or mitigating any accidents previously analyzed in the SAR and was not part of the Spent Fuel Pool Cooling System or any other safety related system; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no adverse effects were possible from the removal of the cask loading pit sump pump or the fill, drain, and vent valves; or

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Technical Specifications concerning the cask loading pit drain and refill methodology or equipment.

ANO-1 PC: 94-7064

Installation of Pump P52A/B Interlocks on Tank T20 Low Level

This plant change installed two 120 VAC interlock relays in the dirty liquid radwaste control panel (C113) to allow automatic shutoff of the dirty waste drain pumps (P52A/B) in the event of low level in the dirty waste drain tank (T20). The interlock circuit utilized the existing dirty waste drain tank low level alarm switches to provide the automatic shutoff signal for P52A/B. This change also installed two bypass control switches on panel C113 to allow for operator bypass of the automatic shutoff feature for P52A/B.

Affected SAR Figure: 11-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this system is not considered an accident initiator or mitigator and does not impact the function or capability of any safety related systems; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not produce any new operational or failure modes for this system; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 94-7065

Installation of Emergency Feedwater Initiation and Control Channel Cross-Check Plant Computer Points

This plant change connected the process inputs for all four channels of Emergency Feedwater Initiation and Control (EFIC) bistables to the Plant Monitoring System (PMS) computer. All process inputs will be picked up after once through steam generator level compensation has been performed by the EFIC System. This will allow continuous monitoring of the EFIC process inputs on the PMS. The PMS will be used to perform continuous channel checks as well as to perform and output shiftly channel check data on demand. The use of the PMS will eliminate process variations from the cross-channel checks, allowing greater accuracy and earlier detection of instrument degradation. The PMS is also much more flexible in its handling of storage and review of historical data, allowing easier review and analysis of EFIC System performance. In addition, EFIC channel "A" and "B" PMS inputs will be used to develop a simulated level control setpoint for EFIC to provide indications to operations personnel of the actual and desired performance of the EFIC Level Control System, insuring that EFIC is performing as expected under all conditions.

Affected SAR Figure: 10-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the EFIC System was not evauated as an accident initiator, this change did not affect the ability or function of the EFIC System's mitigaton features, and operation or failure of the PMS or interconnecting cabling would not impact the function or capability of any safety related systems; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the installation of this modification did not affect the system failure analysis as described in the LBDs; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not contain any margins of safety related to the isolated outputs of the EFIC System or to the EFIC System channel cross-check requirements.

ANO-1 PC: 94-7072

Main Feedwater Pump Turbine Lube Oil Purification

This plant change installed a Turbo-Toc lube oil purification unit at each of the Main Feedwater Pump Turbine (MFWPT) lube oil reservoirs. These purification units will provide water and particulate removal on a full-time, continuous basis. Much lower levels of water and particulate contamination will be achieved, resulting in a higher reliability of control components and greater bearing life. The units are self-contained with skid mounted, industrial grade components. Oil is suctioned from the bottom of the reservoir, heated, and circulated through a pump suction strainer, prefilter, coalescing filter, and finally through a separator filter before being returned to the reservoir. Water is automatically drained from the coalescing/separator filter housing to a floor drain. Local operation and monitoring of system parameters during operation is provided for each unit. Oil flow indication is provided for as well as automatic unit shutdown in the event of low flow or loss of circulating pump suction.

Affected SAR Figures: 1-4, A-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the MFWPT System was not credited with initiating or mitigating any previously analyzed accidents, is not safety related, and does not service any equipment important to safety ; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes complied with applicable design codes, did not alter the lube oil system function or operation, and did not invalidate any previous accident analyses; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases for the MFWPT Lube Oil System or its associated components.

ANO-1 PC: 94-7074

Removal of Old Startup Boiler

This plant change removed Startup Boiler, M-2, and associated pumps, fans, piping, and piping hangers. The boiler blow down tank and water polisher were also removed and the associated piping was cut and capped. The condensate safety relief for the plant heating boiler was relocated to a local drain. Removal of this equipment allowed for central arrangement of the new main chillers and provided adequate area for chiller installation, operation, and maintenance.

Affected SAR Figures: 1-10, 1-5, 1-8, 9-18, A-4, A-6

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not change any operational requirements or safety functions assumed in the SAR and the affected systems and components were not important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since removal of the boiler and piping configurations did not affect any design or operating assumptions used to develop the types of accidents postulated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this modification did not impact any margins of safety defined in the Technical Specification bases.

ANO-1 PC: 95-7007

Conversion of Emergency Feedwater Pump Discharge Pressure Transmitters

This plant change removed the pressure indicating meters for the Emergency Feedwater (EFW) pressure indicating transmitters PIT-2811 and PIT-2812, converting those components to pressure transmitters PT-2811 and PT-2812. The modification of these components did not alter any operating or performance requirements.

Affected SAR Figure: 10-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since removal of the local indicating meters did not impact the safety or design function of the "Q" transmitters; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the design and safety functions of the "Q" transmitters were not affected; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the local indicating meters were not part of the system pressure boundary and did not serve a safety function.

ANO-1 PC: 95-7023

Reactor Coolant Pump Starting Temperature

This plant change lowered the start permissive interlock for the fourth Reactor Coolant Pump (RCP) from 500 to 365 degrees F. The purpose of this interlock is to prevent core movement as a result of excessive hydraulic lift. Calculation 95-D-7023-01 has determined that the fourth RCP may be started at or above 361 degrees with adequate margin to ensure core lift does not occur.

Affected SAR Figure: 7-21

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not affect accident mitigating functions or bounding initial conditions assumed in accident analyses and the new setpoint continues to protect against core lift; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the affected RCP start permissive interlock will continue to perform its intended function and this modification did not create any new failure modes; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the affected setpoint was not addressed in any Technical Specification bases.

ANO-1 PC: 95-7047

Waterbox Vacuum Pump Seal Water Supply Line Pressure Gages

This plant change installed pressure gages upstream of the flow orifices in the Auxiliary Cooling Water (ACW) seal water supply lines of Waterbox Vacuum (WBV) pumps C-14A/B. The gages were installed to measure seal water line pressure in order to establish optimum seal water flow to the pumps since the orifice unions used to control flow rate in the seal supply lines are dependent on line pressure differential. Installation of the pressure gages required an isolation valve to be mounted upstream.

Affected SAR Figure: 9-10

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not change any design parameters or functions that would affect the quality of performance or operability of the WBV or ACW systems and will not interface with any other system in such a way as to cause a system or related component failure; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not affect the function of the WBV or ACW systems and, therefore, did not impact or add to their failure modes as to create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 95-7053

Emergency Diesel Generator Fuel Storage Building Oil Separator

This plant change added a threaded pipe cap to the end of the discharge pipe from the oil separator provided to separate oil from the oily water collected in the emergency diesel generator fuel oil storage building sump. The cap will prevent any discharge of fluid to the ground. When required, the sump content will be routed through the oil separator and subsequently discharged to externally located 55 gallon barrels. The oily water in the barrels will be processed or disposed of as required.

Affected SAR Figure: 8-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the affected equipment was not credited as an initiator or mitigator for any previously analyzed accident, installation of the cap will prevent ground contamination in the event of oil separator failure, and this modification did not affect any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not adversely affect any equipment or systems and did not introduce any new modes of failure; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases regarding the fuel storage building oil separator.

ANO-1 PC: 95-7059

Abandonment of the Steam Generator Nitrogen Supply Line Heat Trace

This plant change disabled and abandoned in place the heat trace for the nitrogen gas supply to the Once Through Steam Generator (OTSG) secondary side. The original design function of the heat trace was to raise the temperature of the nitrogen prior to emitting it into the OTSG in order to prevent thermal stress on the upper tube sheet. This heat trace was considered necessary on older B&W designs that had the nitrogen piped directly to the OTSG just above the upper tube sheet. ANO-1's design has the nitrogen piped to the main steam line in the vicinity of the atmospheric dump valves. Considering the long run of uninsulated nitrogen supply line, and the fact that the supply line does not feed directly into the OTSG, engineering judgment concludes that the nitrogen will be at or near ambient temperature with or without the use of the heat trace.

Affected SAR Figure: 9-4

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the OTSG secondary side nitrogen gas supply line heat trace was not related to any analyzed accident described in the SAR; therefore, abandoning the heat trace did not alter any assumptions made in previouly analyzed accidents. Abandoning the heat trace did not degrade safety component reliability and did not impact any equipment required to support the operability of other safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not introduce any new modes of failure; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety concerning the OTSG secondary side nitrogen gas supply line heat trace defined in the Technical Specification bases.

Decay Heat Circuitry

This plant change relocated the decay heat cooler outlet temperature indication circuits to auxiliary instrument cabinets C543 and C544. The voltage buffers were retained to be used with other instrument loops. All other equipment, wiring, and terminations were removed. The auxiliary instrument cabinets are vital backed and will provide the same degree of reliability as the old cabinets. The Foxboro Spec 200 modules used to provide input and output signal conditioning for the decay heat cooler outlet temperature indication circuits are used extensively in other applications and have been proven to be extremely reliable. This change also replaced the obsolete decay heat cooler outlet temperature indicators with new digital bargraphs. The new bargraphs have selectable input ranges and are software calibrated with excellent drift and linearity characteristics that will result in reduced calibration time and maintenance costs.

Affected SAR Figure: 9-12

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the decay heat cooler outlet temperature indication system was not credited with initiating or mitigating any of the accidents previously evaluated in the SAR and failure of the temperature indication system would not impact the function or capability of any safety related system; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification is similar in design, function, operation, failure modes, and effects to existing systems and the new instrumentation is physically and electrically isolated from any safety related equipment; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety related to the Decay Heat Cooler Outlet Temperature Indication System defined in the Technical Specification bases.

ANO-1 PC: 95-7068

Reactor Coolant Pump Circuit Modifications

This plant change removed the Reactor Coolant Pump (RCP) full speed switches and auxiliary relays, installed a "pull to lock" contact in the stop circuit of the handswitch for the high pressure oil lift pumps and the backstop lube oil pumps, replaced the speed sensing circuit amplifiers, removed the RCP handswitch contacts from the Plant Monitoring System trip indication circuit, and reconfigured the RCP lift oil trouble annunciator alarm relay configuration. This modification was part of a program to eliminate nuisance alarms.

Affected SAR Figure: 7-21

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since none of these modifications affected the accident initiators or mitigators evaluated in the SAR and none of the equipment affected by these modifications was considered equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since none of these modifications introduced new modes of failure; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not define margins of safety associated with RCP alarms or speed circuits.

ANO-1 PC: 95-7069

Reactor Coolant Pump Motor Oil Reservoir Level Indication System

This plant change replaced the Reactor Coolant Pump (RCP) motor oil level switches with two new oil level transmitters per pump (one upper reservoir and one lower reservoir). The transmitters were wired to the Plant Monitoring System to provide direct indication and alarming of RCP motor oil level. These changes will provide accurate, reliable, full range RCP motor upper and lower oil reservoir level indication while maintaining the alarm/interlock functions of the previous equipment.

Affected SAR Figure: 7-21

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the RCP motor oil level system was not credited with initiating or mitigating any previously analyzed accidents and the use of level transmitters and electronic switches in lieu of mechanical pressure switches did not impact the function or capability of any safety related systems; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not change the RCP failure analysis as described in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 95-7081

Modification of Valve FW-1016

This plant change removed the valve internals on FW-1016, a manual globe valve in the Emergency Feedwater (EFW) pumps' bearing cooling discharge line to the circulating water flume. FW-1016 functioned as a common isolation for both pumps. There is currently a check valve and a manual isolation valve in each individual line from the respective pumps upstream of the common line that contains FW-1016. These valves function to isolate and prevent backflow from the circulating water flume. Due to the isolation and backflow capability that the existing valves provide, the redundant isolation that FW-1016 provided was unnecessary. The removal of FW-1016 internals facilitates an unobstructed flow path for FW-1016 bearing cooling and eliminated a potential single failure that could render the EFW pumps inoperable.

Affected SAR Figure: 10-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since FW-1016 is required to be open for the continiuous operation of the EFW pumps and removal of the valve's internals eliminated a potential single failure that could render the EFW pumps inoperable; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the only remaining failure of the valve that could occur after removal of the valve internals would be a breach of the pressure boundary, which has previously been evaluated under original design criteria for the piping system; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since removal of the valve internals did not change the current mode of operation, but eliminated the possible failure mechanism of the valve.

ANO-1 PC: 95-7086

Condenser Vacuum Pump Manual Hogging Switch

This plant change installed a handswitch in each condenser vacuum equipment control scheme to allow operations personnel the ability to manually place the condenser vacuum pump in the high volume "hogging" mode. The primary purpose of the change was to prevent a turbine trip on low condenser vacuum as a result of a total in-leakage greater than both pumps can handle in the lower volume "holding" mode.

Affected SAR Figure: 9-10

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the addition of handswitches interlocked with the "hogging" mode of the condenser vacuum pump did not increase the probability of a turbine trip, this modification did not adversely impact any systems required to mitigate an accident, and this modification is physically separate and electrically isolated from any safety related equipment or systems; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since installation of this modification did not introduce any seismic II/I concerns or create any new mechanism by which equipment important to safety could fail; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not define any margin of safety associated with the condenser vacuum equipment.

ANO-1 PC: 95-7088

Steam Generator Sample Cooler Changeout

This plant change removed steam generator sample cooler, E-31A, and replaced it with a Calgon chemonitor cooling coil. The original sample cooler, designed and built by Whitlock Corporation, was installed prior to plant startup and had become clogged. Attempts to clean the cooler were unsuccessful. The replacement cooler is rated for the pressure and temperature of the sample system and has sufficient heat transfer capacity to accommodate the sample function.

Affected SAR Figures: 9-5, 9-8
Table: 9-6

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the sample cooler is not safety related and is not required for use during emergency conditions and this equipment was not credited with initiating or mitigating any of the accidents previously analzyed in the SAR; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the new cooler has an equivalent pressure rating and is located downstream from the manual isolation valve, the capability to maintain the pressure boundary or isolate the equipment was unchanged by this modification; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 95-7098

Service Water Pump Power Cabling

This plant change repaired the P4C Service Water (SW) pump power cabling by installing an in-line splice and replacing the last 300 feet of cabling and the motor connections. The original 250 MCM triplex cable was replaced with three separate 300 MCM single conductor cables. This SAR revision also allows conduit fill to exceed the 40% limitation on a case by case basis as long as an engineering analysis is performed.

Affected SAR Section: 8.3.1.4.2.1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not affect the operational capability of the SW pump or its feeder cable; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the operational capability of the SW pump was not degraded; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the operational capability of the SW pump did not change.

ANO-1 PC: 95-7103

Modification to Emergency Feedwater Isolation Valves to Prevent Pressure Locking and Thermal Binding

This plant change modified two Service Water (SW) to Emergency Feedwater isolation valves. A bypass line was installed from each of the valves' body/bonnets to the suction side of the valves to prevent potential pressure locking and thermal binding.

Affected SAR Figure: 10-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not change the function of the system, but resulted in increased reliability of these valves to open; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since a rupture of the bypass line would not prevent operation of the valves and would not prevent adequate SW flow to feed the steam generators; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since any applicable margins of safety were unaffected.

ANO-1 PC: 95-8050

ANO Switchyard Battery Disconnect

This plant change installed a non-fusible safety switch for the switchyard battery to allow maintenance and testing of the battery without entering an LCO. The previous configuration required entry into an LCO to perform battery maintenance and testing since disconnecting the battery also disabled the battery charger leaving only one source of DC control power for the switchyard. Installation of a disconnecting means for the switchyard battery will allow future maintenance and testing to be performed without entering an LCO since the battery charger will no longer need to be shut down. The new configuration will continuously maintain two of three DC power sources during battery maintenance and testing.

This PC also affected ANO-2 SAR Figure 8.2-3 as well as the ANO-1 figure listed below.

Affected SAR Figure: 8-9

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since installation of a switchyard battery disconnect did not significantly increase the likelihood of a switchyard DC system failure and may even make the DC system more reliable, this modification did not adversely impact any systems required for mitigation of an accident, and the switchyard 125 VDC system is physically separate and independent from any safety related equipment or systems; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since installation of a switchyard battery disconnect did not introduce any seismic II/I concerns or create any new mechanism by which equipment important to safety could be caused to fail and switchyard DC failure, which could result in switchyard failure, is bounded by a previously evaluated accident; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since installation of a switchyard battery disconnect did not significantly increase the likelihood of a switchyard DC system failure.

ANO-1 PC: 95-8083

Diesel Fire Pump Engine Coolant Temperature Indicator

This plant change installed a new temperature indicator to monitor the coolant temperature during standby conditions on diesel fire pump engine, K-5. The indicator was installed on the tube side of the lubricating oil cooler and upstream of the jacket water heater. The temperature at standby conditions is maintained by the temperature switch on the jacket water heater. Rather than test the thermostat frequently, an additional temperature indicator was added as a check for the thermostat to ensure that it maintains the coolant temperature in its normal standby range.

Affected SAR Figure: 9-16

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not degrade the performance or reliability of the Fire Water System and did not adversely impact equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the Fire Protection System, as evaluated in the SAR, cannot affect equipment important to safety by pipe failure, inadvertent operation, or failure to extinguish a fire. The capability of the system to perform or prevent these functions was not altered by this modification, therefore, no new failure modes were introduced and the possibility of an accident of a different type than any previously evaluated was not created; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not specify a margin of safety with respect to the portion of the Fire Protection System modified by this change.

ANO-1 PC: 96-3034

Replacement of Valves in the Dirty Liquid Radwaste System

This plant change removed the internals to two valves located in the Dirty Liquid Radwaste System due to leakage and abandoned the valve bodies in place. The leakage was attributed to the debris in the Dirty Waste Drain Tank and the physical location of the valves at the lowest point in the suction line from the tank. The debris settled in the check valve seat area and prevented closure. Two new Anchor Darling Series 1878 soft seat, spring loaded piston check valves were mounted in a vertical run of piping above the centerline of the associated pumps.

Affected SAR Figure: 11-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these valves were not credited with initiating or mitigating any of the previously analyzed SAR accidents and replacement of these valves did not impact the function of the Dirty Liquid Radwaste System; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the new valves are equivalent to the valves that were replaced and installation of the soft seat check valves did not change the operating characteristics of the Dirty Liquid Radwaste System; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 963036P101

Dry Cask Impact Inhibitor

This plant change installed a beam to resist the impact of the transfer cask (100 tons) falling from a height of 50'6" due to the postulated failure of the spent fuel pool crane at the equipment hatch on elevation 404' and the cask falling to the train bay floor at elevation 354'. The beam (impact inhibitor) was constructed of ten 10"x10"x1/2" pieces of tube steel and has a minimum length of 34 feet. This impact inhibitor was mounted on Hillman rollers for horizontal movement to allow the train car to be moved into position for loading of the cask.

Affected SAR Section: 9.6.2.6

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the installation of the impact inhibitor eliminated the potential for impacting nearby systems during the movement of the cask in the train bay area; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since installation of the impact inhibitor decreased the potential for damage due to a cask drop.

ANO-1 PC: 963146P101

Bulk Diesel Storage Tank Filter Sample Valves

This plant change installed sample valves to the outlet pressure taps of the bulk diesel storage tank transfer filter housings. The purpose of the modification was to provide chemistry sampling points to ensure that a representative sample of the tank's inventory is obtained for analysis. A sample valve was installed on each duplex strainer housing at the outlet pressure taps downstream of the filter to detect the water content of filtered oil. Stainless steel tubing was connected to the housing drain outlet and run vertically to the housing cover. The valves were supported near the housing covers such that the valves can be accessed by chemistry through the deck plates.

Affected SAR Figure: 8-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the fuel oil storage system is separated from the plant, was not credited with causing any of the evaluated accidents, and the probability of failure or inoperability of the fuel oil storage system was not affected; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the addition of sample valves to the bulk fuel oil storage tank transfer filters did not change or add a different failure mechanism to the T-25 transfer filters as to generate a condition that would lead to an accident of a different type than any previously evaluated the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since it was determined that sample valves installed on the non-safety related bulk storage tank transfer filters did not affect the associated safety related componenets located further downstream.

ANO-1 PC: 963251P101

Plant Computer Reactor Coolant System Temperature Indication

This plant change modified the Plant Monitoring System (PMS) software to compare the Primary and Secondary Heat Balance Calculations in order to automatically compensate for future fouling of the new Main Feedwater Flow Venturis. To implement the new Heat Balance comparisons, additional Reactor Coolant System (RCS) Non-Nuclear Instrumentation (NNI) Inlet (T-Cold) and Outlet (T-Hot) temperature inputs were provided to the PMS. The instrumentation is designed to provide indication of reactor coolant temperature, alarms on high reactor coolant temperature conditions, inputs to the Reactor Coolant Control subsystem of the Integrated Control System, inputs to the Plant Monitoring System based Low Temperature Overpressure Protection alarm, and Start Permissive interlocks to the reactor coolant pumps. This change connected all 8 NNI-X and NNI-Y T-Hot Narrow Range and T-Cold Wide Range signals to the PMS independent of which signals are selected in NNI. The LTOP alarm software was also modified to select the lower of the two input signals to provide a more conservative alarm setpoint.

Affected SAR Figures: 4-1, 7-20

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the new PMS points are driven by existing spare NNI circuits of the same design as those used to drive the previous PMS points, the new circuits are buffered and will not impact the control signals fed to the ICS, and the NNI Reactor Coolant System Temperature Instrumentation is non-safety related and is electrically and physically isolated from all safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the design, function, operation, and failure modes and effects of the circuits have been previously evaluated and this change did not affect any existing failure analyses; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not define a margin of safety related to the NNI Reactor Coolant System Temperature Instrumentation.

ANO-1 PC: 963310P101

Fire Protection System

This plant change installed a one inch ball valve and union in a Fire Water System line to provide a path for fire water used when performing surveillances or to drain the system after the system has actuated. The drain line is open on both ends and is routed from the control valve near the floor then routed through the wall to a floor drain in the Upper North Electrical Penetration Room. The valve was installed in the section of horizontal pipe that is routed toward the elevator shaft wall at elevation 386' in the Health Physics area.

Affected SAR Figure: 9-16

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the Fire Water System was not evaluated as an accident initiator, the installation of this valve did not affect the operation or failure modes of the system design, and this modification did not degrade system reliability; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no new failure modes were introduced by this modification; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the margins of safety as defined in the Technical Specification bases were not altered by this modification.

ANO-1 PC: 963402P101

ESAS Analog Subsystem Actuation Setpoint

This plant change revised the low Reactor Coolant System (RCS) pressure Emergency Safeguards Actuation System (ESAS) setpoint from 1549 psig to 1590 psig. This setpoint determines the point at which the High Pressure Injection, Low Pressure Injection, and Reactor Building Isolation safety function are initiated on decreasing RCS pressure. This action was taken to protect the safety analysis limit of 1520 psig, which is conservatively based on an allowable limit of 1200 tubes plugged per steam generator.

Affected SAR Figure: 7-6
Tables: 4-1, 6-12

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this system was not credited as an accident initiator, this setpoint change will result in earlier actuation of safeguards equipment, and this change did not involve physical equipment modifications to the plant design; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this setpoint change did not create new accident initiators or failure modes; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the in-plant setpoint has been set high enough such that protection is provided for the entire spectrum of break sizes based on available analyses and the setpoint is far enough below normal operating pressure to prevent spurious initiation.

ANO-1 PC: 963408P101

Isolation of Abandoned Piping from Condenser E-11B

This plant change removed an inactive piping section associated with the previously removed makeup demineralizer system. A blind flange was installed on the condenser connection. The piping was removed to minimize condenser air in-leakage concerns.

Affected SAR Figure: 10-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the equipment affected by this modification was not credited with either initiating or mitigating any previously analyzed accident and the removed piping section and valve were inactive and not considered to be equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 PC: 96-7001

Extended Travel of Spent Fuel Handling Crane

This plant change relocated the limit switch striker plate for spent fuel handling crane, L-3, six inches further south to reduce the difficulty of indexing the crane over the south end of the cask loading pit. The striker plate is located at the top of the west crane rail, near the north end of the spent fuel pool. The limit switch striker plate actuates a limit switch which deenergizes the bridge motor before the load is close enough to swing over the spent fuel pool. Allowing the L-3 crane to travel 6" further south will reduce the distance from the crane stopping point and the edge of the cask loading pit. The new distance is within the margin evaluated by calculation 96-E-0005-01, Rev. 0. The movement of the center of gravity of the cask will be no closer than three feet from the south end of the cask loading pit.

Affected SAR Section: 9.6.2.6

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the relocation and verification of the limit switch acutation point and bus isolator section was performed to ensure an adequate margin existed between the point where the crane stops on the cask loading boundary limit switch and the spent fuel pool; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since relocation of the limit switch striker plate and bus isolator section remained bounded by the originally evaluated accident scenario of heavy load drops over the spent fuel pool; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the overall function and failure modes of the crane were not changed.

ANO-1 PC: 96-7010

Secondary Water Hammer

This plant change modified the operation of the Moisture Separator Reheater (MSR) belly drain, separator drain, and distiller drain check valves to make it more convenient for Operations personnel to drain water from the MSR shell and first and second stage heater drains during startup. This modification also added a local manual operator station to permit positioning for eight drain control valves. The position of the valves will be controlled by air pressure via two newly installed instrument air valves. In addition, a handswitch position was added to allow opening of twelve drain check valves to drain water from the system even with the turbine lockout relay in the lockout condition.

Affected SAR Figure: 9-14

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since neither the MSR valves or the Instrument Air System were addressed in any previously analyzed accident and this modification did not affect any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not create any failure modes not already addressed in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases for either the MSR drains or the Instrument Air System.

ANO-1 PC: 96-70 9

Oily Water Separator Discharge Isolation

This plant change isolated the soil surrounding the Diesel Fuel Storage Vault and the Plant Sewer System from oily wastes that may be discharged from the Oily Water Separator by cutting and capping the discharge line upstream of the exterior wall of the vault. All wastes from the diesel fuel storage vault sump will be routed through the Oily Water Separator and discharged into a collection drum.

Affected SAR Figure: 8-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the oily water separator was not credited with initiating or mitigating any of the previously analyzed accidents and it does not interact with safety related systems in the diesel fuel storage vault; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification did not impact the ability of the vault structure or oil storage and distribution system to perform safety related functions; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases related to the oily water separator or its piping discharge lines.

SECTION III

TEMP(RARY MODIFICATIONS

ANO-1 TM: 95-1-025

Blind Flange on Service Water to a Reactor Building Cooler

This Temporary Modification (TM) installed a blind flange on the Service Water (SW) outlet piping of a Reactor Building Cooler to divert the flow path to an operable cooling coil and away from an inoperable cooling coil while repairs were in progress.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the affected portion of the SW system was adequately isolated to prevent leakage into or out of the Reactor Building, the seismic qualification of the system was not adversely affected, and testing was performed to verify system operability prior to operating with the TM installed; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this TM met or exceeded all design requirements of the system and did not impact existing failure modes or create new ones; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there are no Technical Specification basis margins associated with the components affected with this TM.

ANO-1 TM: 95-1-029

Temporary Fire Pump Installation

This Temporary Modification (TM) connected a fire pump and hoses to the test header located outside of the ANO-1 Intake Structure to be used as a backup fire suppression water system in the event that both fire pumps are inoperable.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this TM was not located near any safety-related equipment which could be damaged by fire water, the TM had the capability to be isolated from the system in the event of failure, system operability was not degraded, and the reliability of equipment important to safety was maintained; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this TM did was not located near safety related equipment and did not impact existing failure modes or create new ones for the Fire Protection System; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Technical Specifications bases associated with the affected portion of the Fire Protection System.

ANO-1 TM: 95-1-030

Nuisance Alarms Elimination Associated with the Reactor Coolant Pump 'C' Speed Sensing Circuit

This Temporary Modification (TM) eliminated the relay chatters and the nuisance alarm associated with Speed Sensing Circuit.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the equipmnent associated with this TM was non safety-related and this change did not impact the initiation or mitigaton of loss of flow accident; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this TM did not impact current failure modes or create new ones that would affect the function or reliability of the Reactor Coolant System; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Technical Specifications bases associated with Reactor Coolant Pump alarms or speed circuits.

ANO-1 TM: 95-1-035

Corrosion Coupon Rack Connection Points on Main Condenser

This Temporary Modification (TM) reconfigured the level gauge fittings to provide connection points for corrosion coupon racks at two of the main condenser inlet waterboxes. This allowed chemistry personnel to monitor and evaluate the degree of biofouling for material selection for condenser tube replacements.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the TM affected only non safety-related components, did not change any design parameters or affect the quality of performance of the waterboxes or condensers, and did not interface with other systems in such a way as to cause system failures; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this TM did not impact or create new failure modes that would have affected the function or reliability of the waterboxes; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Technical Specification basis margins associated with the components affected by the TM.

ANO-1 TM: 95-1-037

Air Supply for Service Air System

This Temporary Modification (TM) used a portable air compressor to supply air for the Service Air System. Connection point SA-179, located in the Start-Up Boiler Room, was used for the portable compressor. The cross-connection to instrument air was isolated to prevent service air from being used as back-up source of air for instrument air when the TM was installed.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the TM did not change any design parameters or functions that would affect the quality of performance or operability of this non safety-related system and failure of the TM would be of a mode typical of that previously evaluated in the SAR; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the TM did not alter the function of Service Air System and did not interface with any safety-related system so as to impact current failure modes or create new ones; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Technical Specifications bases associated with the Supply Air System.

ANO-1 TM: 95-1-038

Temporary Circulating Water Pump Cooling Water

This Temporary Modification (TM) provided cooling water to an operating circulating water pump via a hose connection while the normal (common) cooling water supply was isolated for repairs to valves in the cooling water supply to another pump.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the TM was installed in a non safety-related portion of the Service Water System and did not affects the function or capability of any safety-related system or equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since all the equipment associated with this TM was non safety-related and the installation of this TM did not affect the system failure analysis or alter the original function of the pump; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Technical Specification margins associated with either the pump or the portion of the Service Water System affected by this TM.

ANO-1 TM: 96-1-005

Connection Points for Coupon Racks to Evaluate Biofouling of Selected Condenser Tube Material

This temporary alteration provided connection points for coupon racks to ascertain susceptability of biofouling of selected condenser tube replacement material. This modification affected only components related to the condenser waterboxes. The re-directed circulating water flow to the coupon racks was insignificant as compared to the total flow. It also did not interface with any other systems or components required for safe shutdown of the plant.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not change any design parameters or functions of the related components or the quality of their performance and did not interface with any other systems or components required for safe shutdown of the plant; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this temporary alteration did not impact or add to previously evaluated failure modes and did not degrade system or component reliability; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 TM: 96-1-006

Temporary Air Side Seal Oil Coolers

This temporary alteration installed a temporary cooled oil recirculation path from the discharge of the air side seal oil pumps back to the loop seal tank. This modification allowed the E33 air side seal oil cooler to be removed from service for cleaning. In this configuration, a portion of the oil flow was drawn from the in-line filter, cooled with two temporary coolers, and returned to the generator bearing oil line loop seal tank.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since all piping, valves, flanges, and fittings used in the temporary cooling water system met piping class pressure requirements, the Auxliary Cooling Water (ACW) System was not evaluated as an accident mitigator, and the ACW System is isolated from the Service Water System in the event of an accident; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the increased possibility of a leak in the ACW System was insignificant and remained bounded by the existing analyses, the ACW is a non-safety, non-quality system which is isolated from the Service Water System in the event of an accident, and no essential equipment is served by the ACW System; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety in the Technical Specification bases for either the seal oil or the ACW Systems.

ANO-1 TM: 96-1-008

Temporary Gagging of Main Steam Safety Valve

This temporary alteration gagged PSV-2685, one of the eight Main Steam Safety Valves (MSSVs) for the E24B steam generator, closed. The two safety functions of the MSSVs, overpressurization protection and closure, were maintained. Seven of eight valves remained operable, as required, assuring that the steam line was not pressurized above 110% of design pressure during transient conditions.

Affected SAR Section: 10.3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since analysis demonstrated that adequate steam relief capability was available from the remaining MSSVs to assure that the Reactor Coolant System was not overpressurized; or.

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since rendering one MSSV inoperable did not alter the operation or required configuration of the plant; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification requirement to maintain seven of eight MSSVs operable was maintained.

ANO-1 TM: 96-1-009

Temporary Alteration of Diesel Oil Storage Tank

This temporary alteration provided an alternate method of storing diesel fuel oil that allowed the bulk fuel oil storage tank to be drained and cleaned. The temporary alteration provided a means of storing and cleaning the fuel oil from the tank while supplying fuel oil to the underground fuel oil tanks, the fire pump diesel, and the alternate AC diesel generator. This modification provided a 30,000 gallon fuel oil supply, having the same functional capabilities as the day tank.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification installed a bulk fuel oil storage tank that was functionally equivalent to the T-25 tank so that the safety functions of the diesel engines were unaffected; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since none of the safety related functions performed by the Emergency Diesel Generators or the fire pump diesel engines were affected by this alteration; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since neither unit's Technical Specification bases defined a margin of safety for the bulk fuel oil storage tank.

ANO-1 TM: 96-1-010

RS1 and RS3 Temporary Power Alteration

During the replacement of the "red" train inverters Y11 and Y13, this temporary modification supplied 120 VAC to the respective RS panels. Power was supplied from the alternate source transformer in spare inverter Y26 to RS1 and RS3 while Y11 and Y13 were out of service. The effect of this modification on the affected 480 VAC Motor Control Centers was negligible.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not affect any accident initiators, did not alter any assumptions previously made in evaluating the consequences of any accident described in the SAR, and did not degrade any equipment important to safety assumed to function in any accident analysis; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this modification was installed while the reactor was in refueling or cold shutdown and a failure of RS1 or RS3 would not have caused any of the accidents discussed in the SAR and would not have increased the possibility of a new or different failure mode; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the reactor was in refueling or cold shutdown while this modification was installed and, therefore, the applicable Technical Specification and associated margin of safety did not apply.

ANO-1 TM: 96-1-011

Temporary Power Alteration for Installation of Red Train Battery Chargers

The installation of the new red train battery chargers, per DCP 93-1010, required 125 VDC Motor Control Center (MCC) D01 to be de-energized for approximately 48 hours. While D01 was de-energized, this temporary modification supplied 125 VDC to Engineered Safety Features distribution panel RA1 from MCC D02 through distribution panel D11.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not affect any accident initiators, did not alter any assumptions previously made in the accident scenarios involving distribution panel RA1, and did not increase the probability of a malfunction of equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the reactor was in cold shutdown while this modification was installed and the associated safety components were not required to perform any safe shutdown functions; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the reactor was in cold shutdown while this modification was installed and the associated Technical Specification and margins of safety did not apply.

ANO-1 TM: 96-1-017

Temporary Fire Pump Installation

This temporary alteration connected a temporary motor driven fire pump located on the lower grating at the east end of the Unit 2 Intake Structure to the test header located outside of the Unit 1 Intake Structure. The connection was made via hoses routed outside these structures. The pump provided a supplemental supply of lake water to the Fire System to allow use of Fire System water for alternate cooling water supply during refueling outage, 1R13. Use of the temporary fire pump eliminated the need to operate the normal fire pumps when the Fire System was being used for cooling water and also prevented undue wear on these pumps. The normal fire pumps and all normal Fire Protection System components remained functional and available for fire fighting purposes.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these activities did not impact any systems or components credited with initiating any of the previously analyzed accident scenarios, did not affect the Fire Water System's capability to perform in accordance with design requirements, and did not affect the failure mode of any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the supplemental water supplied by the temporary fire pump did not affect the Fire Protection System's capability to perform in accordance with the design requirements as evaluated by the SAR and did not create any new types of failure not previously analyzed in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 TM: 96-1-020

Temporary Cooling Water for the Administration Building Chiller

This temporary modification provided Fire Water System cooling water to the administration buiilding chiller while Auxiliary Cooling Water (ACW) was secured during refueling outage, 1R13. The connection to the Fire Water System was made inside the south end of the turbine building at elevation 363' and the return connection to the ACW discharge plume was at elevation 340', downstream of CV-4026. The cooling load was approximately 50 gpm at 35-45 psig. This temporary alteration did not cause any system to be operated outside of design limits and did not affect any operational system interface.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the activities performed by this temporary alteration were not credited with initiating any of the previously evaluated accidents, the permanent fire pumps were capable of providing the necessary flow for fire protection in the event of a failure of the temporary fire pump and a simultaneous failure of the fire hose, and this temporary alteration did not alter the availability or reliability of any system or the ability of any associated safety related equipment to perform its safety function; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the Fire Water System remained fully operational with no degradation in operability or reliability and since the ACW System is isolated in the event of an accident; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 TM: 96-1-022

Removal of Flexible Links from the Unit Aux Transformer

This temporary alteration removed the flexible links that connected the Unit Aux Transformer to the 6.9 kV non-segregated buswork. This allowed the plant to go into "backfeed" before the outage work on the 6.9 kV buswork was completed. The backfeed only energized the 4160V buswork. This alteration was only installed during refueling or cold shutdown conditions when the reactor coolant pumps were not needed.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since none of the components affected by this modification were credited as initiators or mitigators in any of the analyzed accidents that can occur when the plant is in cold shutdown and installation of this alteration did not impact the function or capability of any safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this temporary alteration did not create any new modes of failure and remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 TM: 96-1-027

Use of P90 as Source Water for the Traveling Screen Wash Systems

This temporary alteration installed a hose from the discharge of the Sodium Bromide/Sodium Hypochlorite Pump, P90, to the screen wash pump header until a new duplex strainer could be installed to replace a damaged strainer. The volume of shad in Lake Dardenelle prohibits the use of only one screen wash pump. The jumper from P90 to the screen wash header was valved so that the pressure could be manually maintained at a level equivalent to that supplied by two screen wash pumps.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since neither of the affected systems were credited with initiating or mitigating any of the previously evaluated accidents and this alteration involved only non-safety equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no new failure modes of the Service Water or Firewater Systems were introduced by the installation of this temporary alteration and a failure of this modification remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Technical Specification bases concerning the Screen Wash System or the Biocide Injection System.

SECTION IV

MISCELLANEOUS EVALUATIONS

ANO-1 CALC: 86E-0002-1

Diesel Generator Load Study

The ANO-1 Diesel Generator Load Study was updated to address changes made to the loading by various modification packages. A correction was made to the SAR to accurately reference a Main Steam Line Break Design Basis Analysis as the worst case loading for the emergency diesel generators.

Affected SAR Table: 8-1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this revision was a wording change only and did not impact any actual hardware; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since correction of the statement regarding worst case loading did not alter the calculation; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not contain the level of detail which would be affected by this correction.

ANO-1 CALC: 94-R-1009

Loss of Coolant Accident Linear Heat Rate Limit

This revision to the SAR reflects the changes made to the Reload Report and the Core Operating Limits Report to reduce the Loss of Coolant Accident (LOCA) Linear Heat Rate (LHR) limits at the two foot elevation. The change to the LHR was required in order to preclude exceeding a peak clad temperature of 2200 degrees F.

Affected SAR Figures: 3A-18, 3A-19, 3B-7A, 3B-7B
Sections: 3A.10, 3A.7.3.1.2, 3A.7.3.2.2, 3A.7.3.3, 3A.8
Table: 3A-12

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this reduction to the LHR limits did not invalidate the current negative imbalance limit and the probability of a malfunction of equipment important to safety could be decreased by a reduction in the allowable LHR since fuel damage would be less likely if the core was operated at a lower power level; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not require any changes to existing plant equipment, did not require the addition of any new equipment, and did not produce any new or different operating conditions; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the margin between the LHR limits that set the negative imbalance limit and the maximum LHR limits to preclude exceeding 2200 degrees F was not explicitly defined or addressed in the Technical Specification bases.

Steam Generator Tube Plugging Limits

This calculation validated that the number of allowed plugged steam generator tubes (1200 tubes per steam generator) can be supported by current plant safety analyses. The evaluations are qualitative in nature. The limiting transients are the Loss of Coolant Accidents and the loss of flow transient. The evaluations concluded that current safety analyses are not invalidated with the allowed plugging limit providing the following conditions are met: 1) Actual Reactor Coolant System (RCS) flow measurements taken during startup verify that sufficient RCS flow exists to protect the Departure to Nucleate Boiling analysis; 2) No more than 75% of the Once Through Steam Generator (OTSG) tubes in the wetted region are plugged; 3) Neither OTSG has more than 8% of its total tubes plugged; and 4) the Engineered Safeguards Actuation System setpoint for low RCS pressure is raised to a new analytical limit of 1520 psig to accomodate a tube plugging limit of 1200 tubes per OTSG.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this calculation provides conditions (limitations) for its use in order to protect current overall system performance and reliability; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this calculation did not introduce any new or different plant operating conditions or failure modes and did not require any physical changes to existing plant equipment; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since OSTG tube plugging was not addressed in the bases of any Technical Specification and the conditions required by the calculations ensure that no margins of safety are otherwise affected.

ANO-1 CR: 1-90-0233

Steam Generator Tube-to-Shell Delta T

This revision to the SAR was made to correct information concerning the normal Steam Generator (SG) tube-to-shell delta T. Previously, text indicated that during normal operation, the tube mean temperature should not be more than 32 degrees higher than the shell mean temperature. This temperature was an approximate design value and was not intended to represent a limiting or maximum allowable delta T. Revised text indicates that during normal operation of the SG, the mean tube-to-shell delta T poses no problems to the structural integrity of the reactor coolant boundary.

Affected SAR Section: 4.3.4.2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the higher delta T steady state condition does not increase the probability of the SG tube rupture event and the analysis for tube-to-shell delta T clearly bounds normal operating conditions; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the SG tube-to-shell delta T limits were not changed and indicated values were well bounded by the existing analysis; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not define a margin of safety regarding SG tube-to-shell delta T values for normal or other operating conditions.

ANO-1 CR: 1-92-0337

Requirements for Critical Pipe

This revision to the SAR clarified intended wording where additional requirements above the ANSI B31.1 minimum requirements were imposed on "Critical Pipe". The minimum scope for critical pipe with regard to licensing commitments was determined to be applicable to only the main header portions of the Main Steam and Main Feedwater System piping and not any of the branch piping. All previous requirements, with respect to licensing commitments, imposed on these main header pipes will remain in force. However, some additional requirements above the ANSI B31.1 Code minimum requirements previously imposed on the 6" nominal size and greater branch piping have been removed and all requirements above the ANSI B31.1 Code requirements for branch piping 4" nominal size and less have been removed entirely. The volumetric examination requirement for all butt welds on 6" nominal size and greater branch piping, although not a regulatory commitment, has been retained based on sound engineering judgment.

Affected SAR Sections: 14.2.2.1.1, A.7.1.19

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since clarifying the committed scope and committed minimum requirements for critical pipe did not change the level of frequency of piping failure and did not increase the probability of an accident previously evaluated in the SAR; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the same failure modes apply and no new failure modes were created which would allow offsite dose levels or the frequency of failure of these lines to increase; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since clarifying the committed scope and committed requirements for critical pipe did not reduce any margins of safety as defined in the basis for any Technical Specification.

ANO-1 CR: 1-95-0577

Operation of the Service Air System as a Contaminated System

Administrative controls were implemented to restrict the use of specific components in the Service Air (SA) System. Seven valves located in the header supplied by SA-8 were found to have low levels of contamination. These values were well below the limits for discharge. Additionally, the small volume of contamination that can be drained from the system, when mixed with other radwaste or turbine drains, would be insignificant in comparison to federal limits and annual discharge totals.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the SA System was not credited with initiating or mitigating any SAR accidents and contamination of the SA System does not affect the function of the system; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since dose rates resulting from a direct release would remain very low and would be bounded by the steam generator tube rupture accident analysis described in the SAR and contamination of the SA System does not affect the system function; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the dose that would occur from the release of condensate from the SA System containing maximum amounts of contaminates would remain well below the 10CFR20 and Technical Specification limits.

ANO-1 CR: 1-96-0567

Reactor Coolant Pump High Pressure Lube Oil Pump in Pull-To-Lock

This condition report addressed placing the Reactor Coolant Pump (RCP) High Pressure (HP) lube oil pump in a pull to lock condition (i.e., not automatically starting upon an RCP trip). This configuration will have an insignificant effect on the initial phase of pump coastdown. The HP lube oil pump was designed to inject oil onto the thrust bearing for lubrication once the pump was tripped. However, since the bearing will be bathed in oil from normal operation of the pump prior to a trip, sufficient lubrication was judged to be available such that the loss of the HP lube oil pump will have virtually no effect on the coastdown for the first ten or more seconds at a minimum. The motor vendor, Jeumont Industries (JI), confirmed that there is no impact on coastdown for at least the first 15 seconds.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evauated in the Safety Analysis Report since the failure of the HP lube oil pump to automatically start upon an RCP trip was not evaluated as an accident initiator, this new configuration will have no impact on the pump coastdown for at least the first 15 seconds, and the way the HP lube oil pump responds after an RCP trip does not effect any other plant equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not mention a requirement for the HP lube oil pump to operate in an automatic mode to supply lube oil to the RCP once it has tripped and there were no margins dependent upon the operation of the HP lube oil pump to automatically actuate upon a loss of its associated RCP.

ANO-1 CR: 1-97-0013

Acceptability of Fiberglass Insulation

Limited Change Package (LCP) 92-5005A replaced portions of the metal reflective insulation on the inlet and outlet piping sections of the A and B Reactor Coolant Pumps (RCPs) with fiberglass based insulation blankets in the ANO-1 Reactor Building (RB). The SAR was not properly updated at the time, and as a result was made incorrect by the change. In addition to correcting the SAR, this SAR change documented the acceptability of fiberglass insulation in this portion of the RCS from a fire protection standpoint and addressed insulation safety, performance issues, and potential effects of sump blockage as originally evaluated by LCP 92-5005.

Affected SAR Section: 4 2.2.7

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the change in insulation did not degrade any equipment used for the mitigation of postulated accidents and, while new insulation could increase the obstructions which could flow into the RB sump after an accident, the potential loading and the effect on Low Pressure Injection (LPI) and RB spray pump suction has been analyzed and found to be within the system requirements. The collection system provides adequate assurance that there is no increased potential for oil spraying or soaking into the fibrous insulation given the design adequacy of the existing RCP oil collection system; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change in the insulation did not change any of the design, construction, or operating assumptions used to develop the types of postuloated accidents that have been previously evaluated in the SAR. In addition, this change did not introduce any unanalyzed hazards, chemicals, power supplies/sources, materials, loadings, or environmental changes which could result in a malfunction of equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since equipment insulation, thermal performance of insulation, and effects of sump screen blockage were not specifically addressed in any Technical Specification bases.

ANO-1 CR: 2-94-0487

Reactor Building Isolation Valves

This revision corrected inconsistencies between similar penetrations and systems. A closed system outside containment designation, in addition to the inside blind flange, was added to P49. Also, the actuation type for P24 and P53 was changed due to the work completed per Limited Change Package 94-5003.

Affected SAR Table: 5-1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this modification did not alter the manner in which the subject valves are required to function in order to fulfill their safety related function, but enhanced the reliability of these valves to maintain containment isolation.; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change had no effect on the physical containment barriers; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Technical Specification bases did not state any specific margins of safety associated with these containment isolation barriers.

ANO-1 CR: C-95-0065

Downgrade of Chlorine Detectors

This condition report provided documentation to allow downgrading of the Chlorine Detection System from a "Q" to a "Non-Q" classification which also implies downgrading from seismic to non-seismic. The chlorine detectors were installed consistent with Regulatory Guide 1.95 when chlorine was stored on site in large quantities for use as a water biocide. Recently, all chlorine was removed from the site. As chlorine is no longer stored on site, Regulatory Guide 1.78 would be more applicable.

This change effected ANO-2 SAR Section 9.4.1.1.2 and Figure 9.4-1 as well as the ANO-1 section listed below.

Affected SAR Section: 9.7.2.1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the Chlorine Detection System was not evaluated as an initiator or a mitigator of any previously analyzed accident, this change did not result in any physical changes to the detection systems, and this change did not adversely impact any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since downgrading the chlorine detectors did not reduce their reliability or create any new failure modes; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the Chlorine Detection System design is still considered consistent with Regulatory Guide 1.95 and there were no margins defined in the Technical Specification bases with regard to the chlorine detectors.

ANO CR :C-96-0023

Emergency Lighting and Access Routes

This Condition Report response revised the Fire Hazards Analysis drawings which illustrate access and egress routes to safe shutdown components that require manual actions. The access paths to the Unit 1 and Unit 2 Computer Rooms were deleted since they were not needed in order to meet the requirements of 10CFR50 Appendix R and did not affect the ability of operations personnel to safely shutdown the plant.

This change affected FHA drawings FP-314 and FP-2314.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the paths that were modified by this change were not needed in order to meet the requirements of 10CFR50 Appendix R and this change did not affect the ability of operations personnel to safely shutdown the plant; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the removal of non-essential access paths did not create an accident of a different type than those previously evaluated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since redefining the required access paths did not affect the margins of safety regarding emergency lighting.

Line Breaks Outside Containment

This revision clarified the line size for which circumferential breaks were to be considered for piping outside containment. The criteria given in NRC documentation with respect to circumferential breaks in piping clearly indicates that the circumferential break criteria applied only to piping in runs and branch runs exceeding one inch nominal pipe size.

Affected SAR Section: A.7.1.3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this wording is consistent with the way the plant was originally constructed and all accidents previously evaluated in the SAR with respect to High Energy Line Break (HELB) criteria for piping outside containment were for piping greater than one inch; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since all other pipe sizes greater than one inch will still be required to meet HELB criteria; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since a line size cutoff limitation for consideration of circumferential breaks in pipes for HELB outside containment is not specifically identified as a part of the Technical Specification. All margins of safety previously evaluated in the bases of any Technical Specification, with respect to HELB criteria for piping outside containment, were for piping greater than one inch.

ANO-1 CR: C-96-0155

Guard Pipe on Hydrogen Supply Line

This SAR revision reflects the removal of the carbon dioxide purge in the hydrogen supply guard pipe to the turbine generator. At one time, hydrogen was piped to the generators through buried, guarded piping connected to the carbon dioxide lines for purging to ensure that no explosive mixtures were formed in the piping. Carbon dioxide is no longer supplied to the hydrogen guard pipe for purging due to an apparent leak in the guard piping.

Affected SAR Section: 10.2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the removal of the carbon dioxide purge from the hydrogen supply guard piping did not significantly increase the probability of a hydrogen fire or explosion or that such an incident would cause a loss of electric power; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change remained bounded by those accidents previously evaluated in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the bases for any Technical Specification that addressed the presence of a purge in the hydrogen supply piping to the turbine generators.

ANO-1 LDCR:

Reactivity Insertion Assumptions

This change provided clarification of the methods used to calculate the affects of a dropped rod accident by defining the actual time for negative reactivity insertion for the rod which is assumed to drop. The results were mainly dependent on the negative reactivity inserted instead of the time assumed to insert the negative reactivity. The insertion of the control rod in two seconds was faster than the Technical Specification required 3/4 insertion of the control rods in 1.66 seconds. This clarification of the method used in the analysis will minimize the chance of confusion. The peak power and minimum Departure from Nucleate Boiling Ratio (DNBR) were not affected by the slight changes in the reactivity insertion profile of the rod.

Affected SAR Section: 14.1.2.7.4
Table: 14-15

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this clarification did not affect any factors credited with initiating or mitigating any previously analyzed accident and there were no changes to the physical plant or to any assumptions concerning plant operation such that the probability of a malfunction of equipment would be increased; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since there was no change to the analysis or assumptions used for the analysis; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins defined in the bases for any Technical Specification that were dependent upon how the time dependence of negative reactivity insertion of a dropped rod was modeled for the dropped rod accident.

ANO-1 LDCR :

Feedwater Flow Correction Factor

Feedwater flow readings from the existing venturis were determined to be in error approximately 2% high. The error in the venturi generated flow readings is believed to be fouling related The error was corrected using multipliers in the secondary heat balance calculation to lower feedwater flow values to establish agreement with the ultrasonic flow reading. Experience at other units has shown that venturi fouling can decrease following transients or significant chemistry changes. To account for this potential non-conservative variation with a fixed correction factor, alarm inputs have been established and weekly procedural monitoring will be present to detect and correct non-conservative indications.

Affected SAR Sections: 1.2.2, 4.1.1.1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since changes associated with the implementation and control of the feedwater flow correction factor did not affect the probability of initiation of an accident, the heat balance uncertainty calculation provided assurance that the assumed 2% error in heat balance indication remained bounding, and the feedwater correction factor and its associated changes did not directly impact equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no new scenarios or out-of-design conditions were created which would not be bounded by existing accident analyses and no conditions were created which would introduce the potential for new or unanalyzed failures of equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the margins of safety defined in the potentially affected bases for fuel integrity and primary power were reviewed and remain true.

ANO-1 LDCR:

Fuel Handling System

This change to the SAR clarified wording regarding the use of a vertical movement interlock to stop upward travel of the spent fuel cask by indicating that the upward movement of the cask is controlled by the crane operator. The revised wording also indicates the capability to disable the pendant control box by use of the attached keylock switch in case of circuitry failure. Additional changes clarified actions such as where the cask is to be cleaned.

Affected SAR Section: 9.6.2.6

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the probaility of allowing the cask to be raised higher than allowed was reduced by required crane operator certification, crane equipment inspection requirements, administrative controls required for the cask lift, and the ability of the crane operator to bypass the pendant control lift circuitry by turning the key lock to the off position or turning the crane off at the pendant; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the load path of the crane and the fuel cask was well defined and was not changed, all safety related equipment and strutures in areas away from the drop are qualified for seismic shock, the probability of a handling height outside of that analyzed was not increased, and the possibility of an accident of a different type than that previously evaluated was not created; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the only Technical Specification related to spent fuel cask loading or transport to the cask loading pit related to heavy loads was deleted in Technical Specification Amendment 173.

ANO-1 LDCR:

Acceptability of Insignificant Steaming of the Main Steam Safety Valves

This revision to the SAR text clarified wording to state that the consideration of zero leakage for the Main Steam Safety Valves (MSSVs) was a purchase specifiction requirement to Dresser Industries for having high integrity, non leakage relief valves. Based upon site operating experience and vendor information, it was determined that minor leakage of MSSVs is not detrimental to valve performance. In addition, a statement was added that minor normal operation leakage is expected and is acceptable.

Affected SAR Section: 10.3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the change in leakage through the MSSVs does not affect considerations of any initiators for existing analyzed accidents, the small incremental amount of leakage would not challange approved dose limits, and no other equipment important to safety is affected; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since safety valve leakage is not uncommon and even if leakage were to result in valve failure, there are no new or different malfunctions which would be created; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change did not affect the number of MSSVs required, and therefore did not affect the margin of safety as defined in the Technical Specification bases.

ANO-1 LDCR:

Cycle 14 Reload Report

The Cycle 14 Reload Report describes the Cycle 14 core and the impact this new core design will have on the existing design and licensing analyses which qualify the ANO-1 core. The Cycle 14 core design differs from that of Cycle 13 in the following ways: a) slightly lower batch 16 enrichment of 3.82 wt%; b) slightly shorter cycle length, but higher fuel batch burnup for batch 14B; c) reduced fuel rod pre-pressure for batch 16 fuel; d) changes in the boron concentration requirements and cycle specific neutronic parameters; e) increased use of optimized flow guide tubes, their affect on bypass flow and the bypass flow affect on DNB and allowed fourth RCP startup temperature, and the affect of these guide tubes use with respect to control rod operation; f) new safety limits, RPS setpoints, and operational limits and setpoints; g) LOCA limits reduced above 40,000 MWD/MTW due to concerns over modeling of high burnup fuel; and h) allowance for an EOC pull of group 7 and reduction of Tavg to reduce power coastdown requirements.

Affected SAR Figures: 3A-1, 3A-10, 3A-11, 3A-12, 3A-13, 3A-14, 3A-15, 3A-16, 3A-17, 3A-18, 3A-19, 3A-2, 3A-20, 3A-3, 3A-4, 3A-5, 3A-6, 3A-7, 3A-8, 3A-9

Section: 3A

Tables: 3A-1, 3A-10, 3A-11, 3A-13, 3A-14, 3A-2, 3A-3, 3A-4, 3A-5, 3A-6, 3A-7, 3A-8, 3A-9

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change in the operating history of the reference cycle for the nuclear and thermal-hydraulic analyses will not result in the probability or consequences of an accident previously evaluated in the SAR being increased and the impact of the operating history on the fuel has been evaluated as part of the Core Design review and found to be acceptable; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the operating history of the reference cycle does not involve circumstances different from those considered by the previous analyses and remains bounded by previous SAR evaluations; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the operating history of the reference cycle was not specified in any Technical Specification bases.

ANO-1 LDCR:

Clarification of the Relationship of the Reload Report to the SAR

The Reload Report is updated each cycle and contains a summary of the analysis, licensing basis, and appropriate references for the current reload. Certain sections of the SAR implied that the Reload Report contained historical information from previous reload reports or more detailed information than the summary level for the current cycle. These changes clarify the relationship between the Reload Report and other sections of the SAR.

Affected SAR Sections: 1.11, 1.5, 14.1, 3-1, 3.1, 3.2, 7.2
Table: 9-4

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes clarify how the information contained in the Reload Report, and its supporting documentation, relate to the information contained in other sections of the SAR. These changes do not impact any accident initiators or mitigators credited in previously evaluated accident scenarios; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes did not result in any physical or operational changes that could create a new accident; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since these changes did not affect any requirements defined in the Technical Specification bases and did not reduce any margins of safety.

ANO-1 LDCR:

Centerline Fuel Melt Limit for Cycle 15, Batches 15 and 16

This change corrected the batch 15 and 16 minimum Linear Heat Rate to melt, also known as the Centerline Fuel Melt Limit, from 22.0 Kw/ft to 21.9 Kw/ft. 22.0 Kw/ft was used as the limit for batches 15 and 16 for late in cycle analysis. However, the limit used in the analysis at the beginning of the cycle was 21.9 Kw/ft.

Affected SAR Table: 3A-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change did not impact any accident initiators, did not create any changes in the assumptions of previously evaluated accidents, and the overall acceptance criteria stated in the Core Operating Limits Report was not impacted; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change in the design cycle did not result in any physical or operational changes that could create a new type of accident; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change was beyond the level of detail described in the Technical Specification bases.

ANO-1 LDCR:

Cycle 14 Core Redesign

During Refueling Outage, 1R13, the discovery of damaged fuel facilitated changes in the previously approved Cycle 14 core design. As a result, a redesign effort was undertaken which produced a new loading pattern and validated previously approved limits and setpoints. The Cycle 14 revised core design plan differs from that of the original base design in fuel substitution, fuel shuffle, and fuel reconstitution, repair, and recage. This revised core plan resulted in minor neutronic perturbations in the core and no significant changes in the physics parameters. Thermal hydraulically, the new core was determined to be bounded by the original design work. In addition, the fuel performance predictions, the ECCS analyses, the non-LOCA safety analyses, the radiological evaluation, and the operating limits and setpoints were examined for the new Cycle 14 design. These evaluations demonstrated that the original Cycle 14 analyses remain valid.

Affected SAR Figures: 3A-1, 3A-3, 3A-6
Sections: 3A.10A, 3A.1A, 3A.3A, 3A.4.2A, 3A.4.3A, 3A.5A, 3A.6A, 3A.7.1A, 3A.7.2A, 3A.7.3A, 3A.7.4A, 3A.8A
Tables: 3A-1, 3A-3, 3A-4, 3A-4A

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since evaluations based on NRC approved methodology indicate that for many of the licensing parameters the redesign physics data are the same as those of the original design. Where differences were noted, they were found to be minor; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since vendor evaluations indicate that the licensing parameters of the revised core were either the same, or only very slightly different, than those of the original design. The changes will not alter the way in which the plant operates and no changes in the failure modes of equipment important to safety were assumed in the Cycle 14 analyses; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since operating limits and setpoints were reevaluated using NRC approved methods. This evaluation concluded that the Cycle 14 safety analysis remained applicable to the revised core design and no changes were necessary.

ANO-1 LDCR:

Power Trip Based on Imbalance and Flow Functions

This change provided clarification that the actual power trip based on imbalance and flow functions is defined in the Core Operating Limit Report (COLR). It also added a reference to the COLR for the actual setpoint and clarified that the information contained in the SAR is an example of a possible trip setpoint and how the setpoint can be interpreted to be affected by changes in flux level, flux imbalance, Reactor Coolant System flow rate, and Reactor Coolant Pump configuration.

Affected SAR Figures: 7-2, 7-3, 7-4
Section: 7.1.2.2.3.B
Table: 7-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change did not impact any accident intiators or mitigators, but clarified that the COLR provides the actual setpoint that assures that the Departure from Nucleate Boiling and Loss of Coolant Accident analyses assumptions are met; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change was made only to provide clarification and did not result in any physical or operational changes that could create a new accident; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change did not affect any margins defined in the Technical Specification bases.

ANO-1 LDCR:

Typical Boron Concentrations

This change modified the boron concentrations stated in the SAR to reflect significantly higher boron concentrations that are now typical. This change also takes credit for control rod worth following a reactor trip in calculating the required volume from the Borated Water Storage Tank (BWST) and the volume that must be processed as waste.

Affected SAR Section: 9.2.2.6

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change did not impact any accident initiators or mitigators credited in the SAR and did not adversely impact any safety related equipment; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not create a physical or operational change that could create a new accident, but provided typical condtions that are bounded by the original requirement with regard to the volume of water in the BWST and requirements for processing; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change did not change any margin of safety defined in the Technical Specification bases.

ANO-1 LDCR:

Makeup and Purification System Valve Packing

This revision to the SAR deleted references to double packing and leak-off connections in the discussion of the Makeup and Purification System. Many of the principal valves in the Makeup and Purification System currently outfitted with double packing and leak-off lines can be repacked with a single packing of improved material, eliminating the need for a leak-off connection.

Affected SAR Section: 9.1.2.5

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since replacing double packing with single packing will not lead to an increase in pipe failures in the Makeup and Purification System and will not affect any safety functions; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 LDCR:

Main Steam Line Break Analysis

Replacement of the E-1 high pressure feedwater heaters necessitated a reevaluation of the Main Steam Line Break (MSLB) Analysis since the replacement heaters had a larger volume, smaller flow resistance, and different heat transfer characteristics than the original heaters. The reevaluation was performed using the methods described in BAW-10193P, August 1995. In addition to properly modeling the replacement heaters, some assumed parameters were changed to yield a more conservative analysis to minimize the need for future reevaluations should the actual values change.

Affected SAR Sections: 10.3, 14.2.2.1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since all these changes involved input assumptions that bounded actual plant initial conditions at the beginning of a MSLB by as much or more than previous assumptions or involved improved analysis tools; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since none of these changes affect the manner or conditions under which equipment important to safety is operated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 DRN: 95-05260

Correction of Clean Liquid Radioactive Waste System Drawing

The Clean Liquid Radioactive Waste System drawing was revised to correct the check valve direction symbol for CS-215 to conform with system flow requirements. This revision also corrected line class HCC-12-1/2" to HDC-14-1/2" for the condensate header branch.

Affected SAR Figure: 11-1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since correction of the check valve symbol and line class was administrative in nature and did not affect any plant component, system, or technical data described in the SAR; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change was administrative in nature and ensured that the drawing correctly reflected the as-built condition of the plant; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since these changes did not affect any physical plant component, operating procedure, or Technical Specification and did not reduce the margin of safety as defined in the bases for any Technical Specification.

ANO-1 DRN: 95-05479

Emergency Feedwater Valve Leak Off Lines

This SAR drawing was revised to depict Emergency Feedwater governor valve and trip and throttle valve leak off lines that were erroneously left off previous revisions. The leak off lines function to drain condensate accumulated in valve gland areas and route it to floor drains.

Affected SAR Figure: 10-2

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the leak off lines serve no safety function and their failure would not impact the safety function of any safety related components or systems; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since installation or failure of the leak off lines would not compromise the function or operability of safety related systems; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the leak off lines serve no safety function and have no impact on the safety function of related safety components.

ANO-1 DRN: 95-06523

Makeup and Purification System Valve Lineup

This revision to the Makeup and Purification System drawing was made to reflect the position change of the demineralizer (DI) influent and effluent sample isolation valves and the boronometer inlet and outlet isolation valves. The DI valve positions were changed from closed to open to limit dose received during sampling of the DI influent and effluent. The boronometer valve positions were changed from open to closed to minimize Reactor Coolant System leakage sources and reduce radiation exposure.

Affected SAR Figure: 9-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the position of the affected valves was not credited with initiating or mitigating any of the accidents analyzed in the SAR, changing the normal position of these valves did not affect the operation of any equipment important to safety, and redundancy for isolation of the letdown line during normal operations and during accident sequences was maintained; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the isolation of the boronometer and the opening of the DI influent/effluent sample valves did not create any new configurations that could result in an accident of a different type than those previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO-1 EAR: 93-0441

Hydrogen Generation Analysis

This revision to the SAR was in response to a concern with the post Loss of Coolant Accident (LOCA) containment spray and sump pH values. The pH values previously reported in the SAR were given at elevated temperature conditions rather than at room temperature. Room temperature pH values are typically used when evaluating the impact of solutions on materials. The hydrogen generation analysis was revised to address the higher corrosion rates of hydrogen producing materials as a result of higher assumed pH values of post LOCA spray and sump solutions. The results of the new analysis demonstrated that the hydrogen recombiner equipment is adequately sized.

Affected SAR Figures: 6-11, 6-14, 6-15
Section: 6.6.1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since changes in the assumed values for the material corrosion rates had no impact on the any accident initiating mechanisms, the results of the new analysis demonstrated that the hydrogen recombiner equipment is adequately sized, and no changes in the assumptions concerning equipment availability or failure modes were made; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes in the assumed values for the material corrosion rates did not require any changes to existing plant equipment, did not require any new plant equipment, and did not produce any new or different operating conditions; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the results of the new analysis demonstrated that the hydrogen recombiner equipment is adequately sized and conclude that the hydrogen concentration can be controlled following a loss of coolant accident.

ANO-1 LIR: L96-0034

Spent Fuel Pool Boron Concentration

This change to the SAR and FHA was made to reflect the higher boron concentrations that will be used in the dry cask loading or unloading sequences. The boron in the spent fuel pool was changed from a "nominal" concentration of 1800 ppm to a "maximum" concentration of 3500 ppm.

Affected SAR Section: 9.6.2.4.3.4

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since increasing the boror concentration in the spent fuel pool did not adversely affect fuel pool materials or equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since no new failure mechanisms were introduced by increasing the boron concentration; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since maximum fuel pool boron concentration was not discussed in any Technical Specification bases.

ANO-1 PEAR: 93-0244

Isolation of Gaseous Radwaste System Control Valves

This plant engineering action isolated two valves in the Gaseous Radwaste System. The purpose of the valves was to automatically regulate water level in the moisture separators by draining the excess water to the auxiliary building sump. Isolation of these valves did not affect safe operation of the Waste Gas System.

Affected SAR Figure: 11-3

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the moisture separators were not evaluated as initiators or mitigators for any previously analyzed accident and this modificaiton did not impact any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since during normal plant operation water will continue to evaporate from the moisture separator and during the postulated Loss of Coolant Accident, the function of the system will not change; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since a margin of safety for the moisture separator was not defined in the basis for any Technical Specification.

ANO QAMO:

Quality Assurance Manual Operations Code Update

This change to the Quality Assurance Manual Operations (QAMO) updated the referenced AWS D1.1 Code edition from 1990 to 1992. The 1992 edition provided expanded options over the 1990 edition on pre-qualified procedures for structural welding joint details that precluded each individual owner from having to qualify each joint used in welding on site. Other changes to the D1.1 Code were editorial or minor technical changes.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the new procedures introduced by the 1992 eddition of D1.1 were tested to the same standards as the previously approved 1990 edition; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the only credible failures were previously evalulated in the accident scenarios addressed in the SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO QAMO:

Records Storage Requirements

This change to the Quality Assurance Manual Operations (QAMO) addressed a change which expanded provisions for maintenance of quality records in support of Arkansas Nuclear One (ANO). This change allows imaging, electronic file, and off site storage. This change was reviewed by Quality Assurance in accordance with the requirements of 10CFR50.54a(3) and it was determined that the change did not represent a reduction in commitments previously established in the QAMO. Implementation of the new methods for records management complied with Generic Letter 88-18 which contained Nuclear Regulatory Commission approval.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since imaging did not change or affect any barriers, release paths, safety systems, or mitigating actions described in the SARs; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the use of optical or offsite storage could not initiate an accident nor could optical or offsite storage cause a safety system not to perform its intended function; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the use of optical or offsite storage did not reduce the margin of safety defined in any of the Technical Specification bases.

ANO QAMO:

Terminology Change from "Permanent" to "Lifetime"

This revision to the Quality Assurance Manual Operations (QAMO) changed the term "permanent" records to "lifetime" records to be consistent with ANSI N45.2.9 and other QAMO references.

This change affected Section 17.4.1 of the QAMO

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since changing the wording regarding optical or offsite storage did not impact any events credited with initiating or mitigating any previously analyzed SAR accident and could not cause a safety system to fail or become degraded; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change was administrative in nature and did not impact plant equipment or operating modes; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no applicable margins of safety defined in the Technical Specification bases.

ANO QAMO:

Quality Control Organizational Change

The Quality Assurance Manual Operations was revised to reflect an organizational change which combined the mechanical/welding and the electrical/instrumentation Quality Control groups into one group w[illegible] a single supervisor. This change allowed flexibility for future streamlining, provided a single point of contact, promoted better communication, and provided consistency with other Entergy sites.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change was organizational in nature and did not impact any previously evaluated accidents; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since there were no physical changes associated with this organizational change; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this organizational change did not result in a reduction in the margin of safety associated with any Technical Specifications bases.

ANO-1 TS: 3.1.7

Pressurizer Code Safety Valve Design Capacity

The Startup Accident was re-analyzed to support a Technical Specification change to revise the Pressurizer Code As-Found Setpoint Tolerance. The re-analysis was performed at a bounding moderator temperature coefficient of +0.9 x 10-4 delta k/k/F, a range of pressurizer levels, Pressurizer Safety Valve (PSV) lift tolerances and relief capacities, and greater delay times for tne high pressure and high flux trip. The SAR was revised to reflect the analysis assumptions and results of the new Startup Accident Analysis.

Affected SAR Figures: 14-1, 14-1A, 14-1B, 14-1C, 14-1D, 14-1E, 14-2, 14-2A, 14-2B, 14-2C, 14-2D, 14-2E, 14-3, 14-4, 14-5, 14-6, 14-7, 14-8

Sections: 14.1.2.1, 14.1.2.2.1, 14.1.2.2.3, 14.1.2.2.4

Tables: 14-3, 14-4, 4-1

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change did not impact any accident intiators and, although the results of the re-analysis indicated an increase in the peak pressure and thermal power, the results were within the limits allowed by Technical Specifications; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes were merely a reflection of the results of a new analysis and changes made previously that provide greater PSV relief capacity than previously assumed and did not result in any physical or operational changes that could create a new malfunction; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this change provided the ability to define the margin that previously existed.

Steam and Power Conversion System Bases

This clarification to the Technical Specifications was made to prevent the existence of two permissible inoperable Main Steam Safety Valves (MSSVs) on the same Main Steam header. In the event that the turbine stop valves are closed, the steam lines will be isolated from one another and the steam relief requirements will be shared by both steam lines separately. While it is true that fourteen valves are required to relieve the total rated steam flow, each steam line must share the relief burden separately. Therefore, seven operable MSSVs should be required per steam line.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this clarification did not alter plant configuration, but assured that both steam lines are adequately protected in the event of a limiting secondary pressurization transient where the two steam lines are isolated from each other; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this clarification did not alter the operation or the required configuration of the plant; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the margin of safety as defined in the bases for any Technical Specification was not reduced as a result of the clarification that the required operable fourteen MSSVs be interpreted as seven on each steam header.

Clarification of Technical Specification Bases 4.7.1

This change to the Technical Specification bases provided clarification of the acceptance criteria to ensure that the rod insertion time requirement included the delay time of the control rod drive breaker opening.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change added clarification of an existing requirement to ensure that analysis assumptions are met and did not create any changes in the assumptions of previously analyzed accidents; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not result in any physical or operational changes that could create a new type of failure; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since this clarification included the delay time of certain components that must be included in the delay time measurement and did not change any requirements of the Technical Specification.

SECTION V

VSC SAR EVALUATIONS

ANO LDCR: VSC SAR

Changes to Ventilated Storage Cask Components

These changes to the Ventilated Storage Cask Components are related to increased length, weight, and other miscellaneous changes for application of the system to ANO. The length changes required few analyses other than for weight and center of gravity. Extensive analyses for the Multi-Assembly Sealed Basket (MSB), MSB Transfer Cask (MTC), and the Ventilated Concrete Cask (VCC) were performed by Sierra Nuclear Corporation to verify that there were no significant reductions in the margin to the structural code allowable for length increases for fuel longer than that used in either ANO reactor. The resultant lengths analyzed were approximately 17 inches longer than the original licensed configuration.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since all lifting devices and weight restraining subcomponents were re-analyzed to NUREG 0612 requirements and the VSC structural design was re-evaluated for the increased weight by comparing the load combinations for normal, off-normal, and accident loadings to ANSI 57.9 requirements for the VCC, and ASME Section III, Class 2, requirements for the MSB structure; or

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since all safety related VSC components were evaluated for malfunctions due to length, weight, and center of gravity changes and were found to be bounded by previous analyses; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since analyses were perfomed to show that all margins assumed or expressed were maintained by the longer VSC components.

ANO LDCR: VSC SAR

Deletion of the Swagelok Fitting in the MSB Shield Lid

This change eliminated the Multi-Assembly Sealed Basket (MSB) drain line quick disconnect to reduce the flow restriction inherent with the swagelok quick disconnect design. A pipe plug was substituted for the fitting to provide closure when necessary. The original design utilized quick disconnects on both the vent and drain lines. This change allows for faster draining, vacuum drying, and backfilling of the MSB. The deletion of the swagelok fitting did not change the operation or shielding characteristics of the VSC system.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the strength and leak tight integrity of the MSB and the fundamental geometry of the MSB structure were not changed; or,

(ii) increase the possibility for an accident or malfuction of a different type than any evaluated previously in the Safety Analysis Report since deletion of the swagelok fitting did not create a need to make changes in any handling interfaces, alter any interfaces with reactor site configurations, make any changes to the systems contents, or significantly change the system's form, fit, or function; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since use of a plug instead of a swagelok did not adversely impact any of the conditions for system use as described in the VSC SAR.

ANO LDCR: VSC SAR

MTC Lifting Trunnions Changed to Solid Material

To facilitate fabrication, the Multi-Assembly Sealed Basket Transfer Cask (MTC) lifting trunnion design was changed from a hollow steel pipe filled with lead and RX-277 grout to solid steel. In addition, two more trunnions were added ninety degrees around from the original trunnions to allow use of the ANO specific work platform over the ANO cask loading pit. Furthermore, the welds attaching the outer shell were improved from a partial penetration to full penetration weld with backing rings. Minor changes were made to the trunnion cover plate diameter to ensure a tight fit up to the trunnion and the weld attaching the cover plate to the trunnion end plate was reduced in size from 3/16 to 1/8 inch. The covers are protective devices to prevent galling of the trunnion and are not required for structual strength.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the MTC trunnions were not credited with initiating or mitigating any of the previously analyzed accidents and the trunnions continue to meet all stated requirements; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the trunnions continue to meet the criteria stated in ANSI N14.6 and to comply with NUREG-0612; or,

(iii) reduce the margin of safety as defined in the bases of any Technical Specification since there were no conditions of system use that were affected by the number or composition of the MTC trunnions.

ANO LDCR: VSC SAR

MSB Shield Lid Change from a Two Piece Lid to a One Piece Lid

The Multi-Assembly Sealed Basket (MSB) shield lid was originally designed to consist of two 2.5 inch thick steel disks which sandwich a 2 inch thick section of RX-277 neutron shielding material. This shield lid was to sit on a support plate which was a single 2.5 inch steel disc which in turn was designed to sit on the shield lid support ring. The MSB shield lid was to be placed on this support plate. The two pieces were then held securely in place between the shield lid support ring and the structural lid. This design change made the suppport plate an integral part of the MSB shield lid, essentially making the bottom plate of the shield lid 5 inches thick. The change allowed for the new bottom plate to be made up of either one 5 inch thick plate or two 2.5 inch thick plates welded together. Since the shield lid is installed in the MSB when it is underwater in the cask loading pit, combining the bottom support plate and the shield lid makes handling of these components much easier.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since this change was made for operational considerations only and did not impact any previously assumed functionality of the shield lid and support plate and did not adversely impact any equipment important to safety; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change was made for operational considerations only and did not impact the previously assumed functionality of the shield lid and support plate; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no conditions of system use that were affected by the manner in which the MSB shield lid and support plate were installed in the MSB whether it be by two separate components as before or as one combined shield lid.

ANO LDCR: VSC SAR

Changes to Address Confirmatory Action Letter 4-96-002

This revision to the VSC SAR added a statement to include steps to minimize the potential for generation and ignition of explosive gases in the Multi-assembly Sealed Basket (MSB), as well as actions to respond to a gas ignition event. This additional statement conforms with the requests made by the NRC in Confirmatory Action Letter 4-96-002.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the actions taken to minimize the generation of hydrogen, as well as the addition of preplanned procedural actions to be taken in the event of an explosive gas event, may reduce the probability and consequences of such an event; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the actions taken to prevent or mitigate an explosive gas event will not affect the confinement boundary or shielding ability of the Multi-Assembly Sealed Basket; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the actions taken to prevent and mitigate an explosive gas event in the MSB will not affect the characteristics of the fuel to be stored in the MSB, the maximum permissible leak rate of a sealed MSB placed into storage, or the boron concentration of MSB cavity water when placing or removing fuel from the MSB.

ANO LDCR: VSC SAR

Dry Fuel Storage and Compliance with NUREG-0612

This safety review was required to show operational compliance with NUREG-0612 and existing plant-specific heavy load requirements. One of the conditions set forth in the Certificate of Compliance (C of C) for use of the Ventilated Storage Cask-24 Cask System under a general license pertains to heavy load requirements. Section 1.1.4 of the C of C notes that lifts of the MSB in the multi-assembly transfer cask must be made within the existing heavy load requirements and procedures of the licensed nuclear power plant. The MTC design has been reviewed under 10CFR72 and found to meet NUREG-0612 and ANSI 14.6.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the load path of the crane and the fuel cask was well defined and was not changed; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the postulated drop of the cask or shield lid is bounded by those accidents previously evaluated in the SAR. All safety related equipment and structures in the path have been identified and evaluated for the cask drop; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since full compliance with those Technical Specifications and bases affected by this activity was maintained.

ANO LDCR: VSC SAR

Use of Kevlar Slings for Movement of the Multi-assembly Sealed Basket

This change permits the use of Kevlar slings to lift the Multi-assembly Sealed Basket (MSB) in lieu of heavy wire rope slings as originally planned. The MSB is lifted using slings which attach to lifting rings on the top of the MSB, permitting the MSB to be lifted independently of the MSB Transfer Cask (MTC) such that the MSB may be lowered from the MTC into the Ventilated Concrete Cask (VCC). The Kevlar slings meet or exceed the strength requirements of the wire slings and the lifting arrangement is bounded by the MSB lift analysis.

This change affects Section 11.1.3.2 of the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the Kevlar slings maintain the assumptions used in the MSB anaysis; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the Kevlar slings are used in a very limited role, are as strong as the wire slings that were originally planned for use, and maintain the assumptions used in the MSB lift analysis; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Conditions of System Use affected by the type of sling or sling arrangement used.

ANO LDCR: VSC SAR

Multi-assembly Sealed Basket Transfer Cask Door Modification

This change reduced the Multi-assembly Sealed Basket Transfer Cask (MTC) door thickness from 9 inches to 7.13 inches to reduce the overall height of the MTC. The modification replaced 3.85 inches of steel with 2 inches of lead resulting in an equivalent shielding thickness based on gamma shielding characteristics for the two materials. The structural analysis for the doors was revised and demonstrated that the new design provides for factors of safety which meet the ANSI and NUREG-0612 requirements.

This change affected Sections 3.4, 5.3, and 5.4 of the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the MTC doors were not credited with initiating or mitigating any of the previously analyzed accidents and this change did not impact the structural characteristics of the MTC; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change remained bounded by previously analyzed accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Conditions of System Use that were affected by the fabrication or makeup of the MTC doors.

ANO LDCR: VSC SAR

Minor Design Changes to the Multi-assembly Sealed Basket Transfer Cask

Several changes were made to the Multi-assembly Sealed Basket Transfer Cask (MTC) design/specification after Revision 0 of the VSC SAR was approved. These changes to the MTC represent drawing clarifications, cleanup and correction of minor details, increased tolerances for fabrication in some areas and restrictions in other areas, and minor changes to enhance usability of the components. These changes did not impact the structural characteristics of the MTC.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since none of these changes impacted the structural characteristics of the MTC, how it's loaded, the lifting operation, or transfer capability to the storage cask; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes did not reduce the margin to structural failure or decrease the ability of the MTC to transfer the Multi-assembly Sealed Basket to the Ventilated Concrete Cask; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since these modifications did not affect any Conditions of System Use or associated bases.

ANO LDCR: VSC SAR

Improvements to the Ventilated Concrete Cask

Several changes were made to the Ventilated Concrete Cask (VCC) design/specification after Revision 0 of the Ventilated Storage Cask (VSC) was approved. These changes to the fabrication specifications and drawings for the VCCs represent drawing clarifications, cleanup and correction of minor details, increased tolerances for fabrication in some areas and restrictions in others, and minor changes to enhance usability of the components. These changes did not impact the function or method of use of the VCC.

This change affected the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes did not impact the structural characteristics, function, or method of use of the VCC and did not reduce the margin to structural failure; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes did not create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Conditions of System Use or associated bases that were affected by any of the changes to the VCC fabrication specifications or by the changes to the drawings.

ANO LDCR: VSC SAR

Minor Multi-assembly Sealed Basket Design Changes

These miscellaneous changes to the Ventilated Storage Cask (VSC) SAR and fabrication specifications represent drawing clarifications, cleanup and correction of minor details, increased tolerances for fabrication in some areas and restrictions in other areas, and minor changes to enhance usability of the components. These changes did not impact the structural characteristics of the Multi-assembly Sealed Basket (MSB).

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since all form fit and functions of the MSB components were maintained and the changes did not reduce the margin to structural failure or decrease the effectiveness of the MSB closure barriers; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes did not create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since these changes did not impact any Conditions of System Use or associated bases and did not affect how the components are utilized.

ANO LDCR: VSC SAR

Use of Carboline Carbo Zinc 11, Carbo Zinc 11 HS, and Carbo Zinc 11 SG on VSC Components

This change to the Ventilated Storage (VSC) Cask SAR allowed the use of Carbo Zinc 11 HS and Carbo Zinc 11 SG as acceptable coatings in addition to Carbo Zinc 11 on the Multi-Assembly Sealed Basket (MSB), MSB Transfer Cask, and on the inside of the Ventilated Concrete Cask. These coatings will be applied to the VSC main components to minimize corrosion, to protect the pool chemistry from the carbon steel components, and for ease of decontamination following loading. The coatings are radiation resistant, washable, scratch-resistant, and fuel pool compatible.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the change to the coatings did not impact the structural characteristics of the VSC system components; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the change in coatings did not impact the function or method of use of any of the VSC system components and did not create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the VSC SAR; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no margins of safety defined in the Conditions of System Use that would be affected by the use of Carbo Zinc 11 HS or Carbo Zinc SG in lieu of Carbo Zinc 11.

ANO LDCR: VSC SAR

Reduction in Height of the Shim Material for the MSB Shield Lid Weld

The shim material for the Multi-assembly Sealed Basket (MSB) shield lid weld was decreased in height from 2-1/4 inches to a range of 1 to 2-1/4 inches in order to ease placement during the loading process. The shim provides proper positioning of the shield lid and is a backing ring for welding the shield lid to the MSB vessel wall. Reducing the shim height did not alter these intended functions and significantly eases placement of the shims in both time and effort. The shims were not credited in the shielding analysis and reduction in thickness will have little affect on occupational dose due to the angle presented by the position of the shim in relation to the fuel and the thick support plate directly below the shim area. The reduction in shim thickness will allow faster lid fit-up resulting in lower doses to the welding crew.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the change in height of the shim material did not impact the structural characteristics of the MSB and did not affect the probability of dropping the shims or of damaging the fuel if they are dropped; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change did not impact the function or method of use of the MSB or the MSB shield lid, or impact the quality of the weld between them. The shim is internal to the MSB and cannot affect any safety related equipment other than the MSB; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there are no Conditions of System Use that are affected by the fabrication or makeup of the MSB shield lid shims.

ANO LDCR: VSC SAR

Reduction in Thickness of Shim Material for the Multi-assembly Sealed Basket Transfer Cask

The thickness of the shim material for the Multi-assembly Sealed Basket Transfer Cask (MTC) yoke, which determines the yoke's final inside diameter, was decreased from 1.19 inches to 0.85 inches in order to fit the as-built ANO MTC. The initial as-built inside yoke dimension was 82.31 inches compared to a required 82.5 +/- 0.05 inches. This condition was corrected by changing the thickness of the shims. A review of the ANO yoke analysis confirmed that the inside dimension assumed was 84 inches or less with the shim thickness noted "as required". The stress calculation performed by Sierra Nuclear confirmed that the resultant inside width is sufficient to maintain NUREG-0612 and ANSI compliance, assuming maximum load and a 10% dynamic factor.

This change affected the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since the change in thickness of the shim material did not impact the structural characteristics of the MTC yoke and did not increase the probability of a crane drop; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change remained bounded by previously evaluated accident scenarios and did not adversely impact any equipment important to safety; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since the dimension of the shims and the distance between the yoke arms is below the level of detail in the bases of the Conditions of System Use.

ANO LDCR: VSC SAR

Multi-assembly Sealed Basket Transfer Cask Fabrication Nonconformances Accepted As "Use As Is"

This evaluation documents the review of specific nonconformances to the Multi-assembly Sealed Basket Transfer Cask (MTC) drawing requirements for the MTC during fabrication. The nonconformances are as follows: two MTC door dimensions did not meet dimensional requirments; one door rail assembly to the MTC bottom plate inner 5/8 inch weld was concave instead of ground flush; certain welds at sections along the outer shell to the bottom plate were out of tolerance for a short length; and the bottoms of two doors were machined to prevent sticking.

This change affected the VSC SAR.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes to the MTC welds, door rails, and MTC doors did not impact the structural characteristics of the MTC and the doors were not credited in any of the previously evaluated accident scenarios; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since this change to the MTC welds, door rails, and MTC doors did not impact the structural characteristics of the MTC or the function or method of use of the MTC doors; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Conditions of System Use that were affected by the fabrication tolerances or makeup of the MTC doors as described.

ANO LDCR: VSC SAR

ANO VCC Fabrication Nonconformances Accepted as "Use As Is"

This evaluation documented review of the following nonconformances to the Ventilated Concrete Cask (VCC) drawing requirements for the ANO VCCs during fabrication previously documented under Sierra Nuclear Corporation. (1)The height of the cask liner VCC-5 measured 0.1 inches over the drawing dimensional requirement. The evaluation of this discrepancy determined that no design, fit, or functional restrictions resulted from the liner being slightly out of tolerance vertically. (2)The air outlet opening "B" on VCC cask liner 7 was determined to be oversized at each end and in the 19 inch center region. The balance of the opening was within the drawing dimension and tolerance requirement. The evaluation of this condition concluded that fit up and function between the liner air outlet opening and the air outlet duct work was not affected due to the requirement of a loose siding fit and the seal of the duct to liner provided by the concrete once placed.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes to the VCC liner height and liner air outlet opening did not impact the structural or hydraulic characteristics of the VCC or the ability of the VCC to perform as designed; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since all design, functional, and fit provisions for loading, cooling, and shielding the MSB remain intact; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specification since there were no Conditions of System Use that were affected by the fabrication tolerances or makeup of the VCC as described.

ANO LDCR: VSC SAR

ANO MSB Fabrication Nonconformances Accepted as "Use As Is"

This evaluation documented review of the following nonconformances to the Multi-assembly Sealed Basket (MSB) drawing requirements for the ANO MSBs during fabrication previously documented under Sierra Nuclear Corporation. (1)The stack up height of the fabricated shield lid for MSB-3 was less than the required thickness in some areas around the outside edges of the lid. It was determined that the under-tolerance shield lid was acceptable based on the overall stack up of the shield lid and structural lid thickness being within the combined tolerance requirement, the reduced thickness having no bearing on the structural adequacy of the lid, and a review of shielding requirements which showed that there would be no significant increase in dose rate for a lid with minor imperfections near the edge. (2)The gap between the MSB vessel and structural lid was found out of tolerance. Acceptance of the out of tolerance fabrication was based on the gap being an intern dimensional requirement intended for ease of weld fit up to meet code requirements and that the weld maintained all code and structural design strength requirements. (3)The MSB-3 shield lid swagelok cavity was modified to increase the hole diameter to match the size of the same holes in the other MSB shield lids for ease of swagelok maintenance. However, during the performance of the task, the hole was inadvertently over-bored in diameter such that the drawing requirement varied over the length of the cavity as much as 0.065 inches out of tolerance. It was determined that the affect on the lid's structural capacity was insignificant and that the intent of the drawing dimensions in maintaining hole spacing in the lid was not violated. (4)During fabrication of the storage sleeve assembly for MSB 10, the dimensional tolerance for the overall perpendicularity of the fuel cell assembly was exceeded by 0.025 inches. The bases for acceptance of the out of specification was the ability for normal fit-up with the MSB vessel and no reduction in capability to receive ANO fuel.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since these changes to the MSB shield lid stack-up thickness, structural lid gap, fuel cell assembly perpendicularity, or the resultant size of the swagelog cavity did not impact the structural characteristics of the MSB; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since these changes did not impact the function or method of use of the MSB and these changes remained bounded by previously evaluated accident scenarios; or,

(iii) reduce the margin of safety as defined in the basis of any Technical Specfication since there were no Conditions of System Use that were affected by the fabrication tolerances or makeup of the MSB as described.

VCC-24-03 Base Plate/Storage Pad Gap

This evaluation documents review of the condition of Ventilated Concrete Cask (VCC) VCC-03 not sitting flat on the storage pad, having a gap on one side between the cask and the pad following fuel loading. VCC fabrication drawing requirements describe a "levelness" of 0.3 inches of the top of the VCC bottom plate assembly and the construction pad. Investigation indicated that there was compliance with that dimension during construction. However, the side of the VCC bottom assembly of interest may have been slightly bent during transport. The design requirement for VCC levelness or flatness was reviewed to determine impact on operability. The structural analysis assumed that all of the fully loaded Multi-assembly Sealed Basket (MSB) weight is taken by the concrete bottom only over the surface area of the MSB, i.e. the structure is qualified as long as at least 21.3 square feet of the total 95 square feet of the VCC is resting on the storage pad.

It was determined that these changes did not:

(i) increase the probability of occurrence or consequence of an accident or malfunction of equipment important to safety evaluated in the Safety Analysis Report since neither the structural characteristics nor the method of use of the VCC were impacted; or,

(ii) increase the possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report since the method of repairing the gap had no effect on the containment ability of the VCC; or,

(iii) reduce the margin of safety as defined in the bases of any Technical Specification since there were no Conditions of System Use that were affected by the tolerances of the VCC bottom plate or bottom plate to storage pad.