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DAEC Plant Support Center
Operated by Nuclear Management Company, LLC

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Cyclic Report of Facility Changes, Tests and Experiments, Fire Plan Changes and Commitment Changes
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In accordance with the requirements of 10 CFR Section 50.59(d), please find enclosed the subject report covering the period from March 1, 2000 through October 31, 2001. A summary of changes to the Duane Arnold Energy Center Fire Plan during the same time period is included, as well as a summary of commitment changes.

Should you have any questions regarding this matter, please contact this office.

Sincerely,

Kenneth S. Putnam
Manager, Licensing

Attachment: Cyclic Report of Facility Changes, Tests and Experiments, Fire Plan Changes and Commitment Changes

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Cyclic Report of Facility Changes, Tests and Experiments, Fire Plan Changes and Commitment Changes

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Section A - Plant Design Changes

This section contains brief descriptions of plant design changes completed during the period of March 1, 2000 through October 31, 2001 and summaries of the evaluations for the changes, pursuant to the requirements of 10 CFR Section 50.59(d). All changes were reviewed against 10 CFR 50.59 by the Duane Arnold Energy Center (DAEC) Operations Committee. None of the changes involved an unreviewed safety question.

The basis for inclusion of an Engineering Change Package (ECP) in this report is operational release of the associated modification at the DAEC during the period of March 1, 2000 through October 31, 2001. Unless otherwise indicated, the basis for inclusion of an Engineered Maintenance Action (EMA) is completion of all the changes described in the evaluation, during the period of March 1, 2000 through October 31, 2001. Portions of some of the modifications listed were partially closed or partially operationally released in previous years.

SE 98-068 (Revision 1) **EMAs For Installation Of Test Connections For Emergency Service Water Control Valves**

Description and Basis of Change

This safety evaluation is for the installation and operation of test connections for air-operated valve (AOV) diagnostic testing on the 'A' and 'B' Control Room Chiller Emergency Service Water (ESW) Discharge Isolation Valves and the 'A' and 'B' Emergency Diesel Generator ESW Supply Isolation Valves. The use of these test connections will be controlled by an Equipment Monitoring Procedure. The AOV diagnostic testing will be performed during the normal surveillance. The design bases for the 'A' and 'B' Control Room Chiller ESW Discharge Isolation Valves and the 'A' and 'B' Emergency Diesel Generator ESW Supply Isolation Valves is to open to provide cooling flow to these components in the event of a design basis Loss of Coolant Accident (LOCA) or a loss of off-site power. These valves are closed during normal plant operation. When the associated emergency service water pump is started the solenoid valves that are providing air to these control valves are de-energized. This will cause the air to be vented from the control valves and allow the spring force to open the control valves.

Evaluation Summary

The Emergency Service Water system is a support system for other safety systems required to respond to an accident. The Emergency Service Water system is not part of any initiating events for any of the accidents evaluated in the Safety Analysis Report (SAR). The test connections are installed in the air line, which is only used to close these control valves. A

failure of the test connections can not prevent the control valves from opening. There are no credible ways of increasing either the probability of occurrence of an accident or the consequences of any of the accidents evaluated in the SAR, and the probability of occurrence of a malfunction of equipment important to safety as evaluated in the SAR is not increased. The possibility of an accident not previously evaluated is not created and there is no increase in the possibility of malfunction of any equipment important to safety not previously evaluated. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. Since the installation and operation of the test connections can not prevent the valves from opening as designed there is no possibility of reducing any margin to safety as defined in the basis of any Technical Specification.

SE 98-084 (Revision 1) **Installation And Operation Of Test Connections For River Water Supply (RWS) System Control Valves**

Description and Basis of Change

An EMA installed test connections and isolation valves for air operated valve (AOV) diagnostic testing on the Radwaste Dilution Line Isolation Valve, Radwaste Dilution Line Isolation From 'A' RWS System, Radwaste Dilution Line Isolation From 'B' RWS System, 'A' RWS Inlet To Stilling Basin, and 'B' RWS Inlet To Stilling Basin. Tee connections were installed in the air lines for the valves. From these tee connections, isolation valves were installed. A cap was installed on the test connections to prevent leakage. The use of these test connections is controlled by an Equipment Monitoring Procedure or Maintenance Instructions. The AOV diagnostic testing is performed during normal stroking of the valve or during the normal surveillance. These five air operated valves are Category 1 valves in the AOV Program. As part of the AOV Program these valves are required to be diagnostically tested to verify the valve is functioning properly. The diagnostic test requires that the air pressure of the valve actuator be measured during valve stroking.

Evaluation Summary

The RWS System is a support system for other safety systems used to respond to an accident. The RWS system is not part of any initiating event for the accidents described in the SAR. The installation of test connections, installation of test connection isolation valves, and the use of the test connections during normal stroking of the valve or during the normal test surveillance can not prevent the control valves from going to their fail safe position as designed. There is no possibility of increasing the occurrence of an accident previously evaluated in the SAR. This

activity did not increase the consequences of an accident evaluated previously in the SAR, and the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. If a test connection were to leak, the control valve would fail to its required safety position. The installation of the test valve allows connection to the control valve without disabling the valve. The consequences of a malfunction of equipment important to safety evaluated in the SAR were not increased. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The use of the test connections does not affect the operation of the control valve. The monitoring point cannot prevent air from being directed to the control valve or from air being vented from the control valve. Since the control valves still perform their safety function to provide flow to the stilling basin, the installation of the test connections and test connection isolation valves does not reduce the margin of safety.

SE 98-090 **Removal Of Pressurized Lube Oil System From Bearing Case On Reactor Water Clean-Up (RWCU) Pumps**

Description and Basis of Change

The 'B' RWCU pump bearing case was using excessive oil. It was hypothesized that oil was misting out through the breather cap and the bearing isolators at either end of the bearing case. The misting was attributed to a pressurized lube oil system that forces oil through the races of the ball bearings. A temporary modification was installed on the 'B' pump that isolated the pressurized lube oil system. A constant level oiler (bubbler) which was originally provided with the pump, maintained oil level in the case which provided splash lubrication to the bearings. The case temperature stabilized at reasonable levels and no oil was used during a two week period. Subsequently, EMAs were initiated to replace the pressurized lube oil system with a splash lubrication oil system for the RWCU pumps. The pressurized lube oil system was removed from the bearing case on the RWCU pumps. Electrical power and control items were also removed. The bearings in the case are now lubricated by a splash system.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The lubrication system does not perform a safety function. The change from a pressurized system to a passive splash system did not affect the performance of the RWCU System. The

affected portion of RWCU will not initiate accidents as previously analyzed in the SAR. This activity did not increase the consequences of an accident evaluated previously in the SAR. The probability of a malfunction is not changed, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. This activity removed equipment and hardware to provide a passive means to provide the same function of lubricating bearings. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The current lubrication system is a proven design used in many applications through out the plant. This change did not reduce the margin of safety as defined in the basis for any Technical Specification. The splash lube oil system will not affect the margin of safety.

SE 98-106 Fuel Pool Demineralizer Valve Changes

Description and Basis of Change

EMAs replaced the Fuel Pool Demineralizer main drain and precoat supply plug valves with full port ball valves. The valves required service due to seating problems and did not provide adequate isolation which allowed significant leakage of the waste sludge tank.

Evaluation Summary

The replacement of the plug valves and actuators with ball valves did not increase the probability of an accident evaluated in the SAR. The replacement valves perform the exact same function as the previously installed valves. In order to maintain assurance of pressure boundary integrity the replacement valves were procured to a standard of quality equivalent to that of the previously installed valves. This activity did not increase the consequences of an accident evaluated in the SAR. The possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. This activity did not challenge the installed equipment. This change did not create the possibility of an accident of any type. The valves are used to isolate segments of the Fuel Pool Cooling and Cleanup System and are not required for the performance of any accident function. This change did not reduce the margin of safety as defined in the basis for any Technical Specification. This activity had no affect on system operation, set points,

capacity, or any of the operating modes described in the Operating License and Technical Specifications.

SE 98-109 (Revision 2) ECP 1604 - Well Water Control Enhancements

Description and Basis of Change

A hold on loss of signal controller was installed at each well house (A through D). Upon a loss of signal condition, the new signal controller continues to send the last valid control signal to the well pump variable speed controller unit or well motor operated valve positioner and activates an annunciator on the control room well water panel. The well water common flow transmitter was replaced with a multivariable transmitter (flow and pressure transmitter). A well water supply header pressure indicator, and a high well water supply header pressure alarm window were added to the control room well water panel. A low flow cutoff feature was added which upon the loss of the signal controller transmits a zero flow value to the well water flow recorders. The Well Water System can still be operated locally in a loss of signal controller failure event. The addition of the loss of signal controllers enhanced the Well Water System reliability. The total well water flow meter was removed since it was no longer used. To address a single point of failure for all four well recorders and the total well water flow recorder, the total well water flow recorder was replaced with one that has an independent power supply from the four well recorders.

Evaluation Summary

Loss of the Well Water System will not initiate an accident. These changes do not prevent the system from performing its design function. The Well Water System can be operated in the manual mode in the event a loss of signal controller fails. The hold on loss of signal controller can not initiate any of the accidents described in the Updated Final Safety Analysis Report (UFSAR) or the Nuclear Safety Operational Analysis (NSOA). These upgrades did not increase the probability or consequences of accidents already analyzed in the SAR. The Well Water System is non-safety related and these improvements enhanced system reliability, therefore, this change did not increase the probability or consequences of a malfunction to safety related equipment already analyzed in the SAR. These changes did not create the possibility of an accident or malfunction of safety related equipment of a type not already analyzed in the SAR, since this modification did not introduce any new failure modes. Technical Specifications have no Well Water System requirements, therefore, this change did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 98-113 (Revision 1) **Use And Installation Of Test Connections For Various Containment Atmosphere Control System Valves**

Description and Basis of Change

An EMA installed test connections for air-operated valve (AOV) diagnostic testing of the Containment Nitrogen Makeup Supply Isolation Valve, Drywell Nitrogen Makeup Inlet Isolation Valve, Torus Nitrogen Makeup Inlet Isolation Valve, Nitrogen Compressor Drywell Suction Inboard Isolation Valve, Nitrogen Compressor Drywell Suction Outboard Isolation Valve, and Drywell Valves Nitrogen Supply Isolation Valve. (Plans are to install test connections for the Torus/Drywell Vacuum Breaker Nitrogen Supply Isolation Valve during RFO 18). The use of these test connections is controlled by an equipment monitoring procedure or maintenance instructions. The AOV diagnostic testing is performed during normal stroking of the valve or during the normal surveillance testing.

Evaluation Summary

The design safety function of the valves is to fail close to isolate containment. The non-safety related applications of these valves are to provide the normal nitrogen makeup supply to the containment and nitrogen to equipment in the containment. None of the criteria specified in the Design Bases Documents (DBDs) were affected by this activity. All of the accidents in the UFSAR were reviewed with respect to this modification. Since the installation and operation of the test connections can not prevent the valves from going to their fail safe position as designed, there are no credible ways of increasing either the probability of occurrence of an accident or the consequences of any of the accidents evaluated in the SAR. There are no credible failures that could increase either the probability of occurrence or the consequences of a malfunction of equipment important to safety as evaluated in the SAR. There are no credible failures that could create the possibility of an accident not previously evaluated or increase the possibility of malfunction to any equipment important to safety not previously evaluated. There is no possibility of reducing any margin to safety as defined in the basis of any Technical Specification.

SE 99-005 (Revision 1) ECP 1619 – Fire Alarm System Changes

Description and Basis of Change

ECP-1619 included the following changes:

- The XL3 panel 1C40B was replaced with a MXL fire control unit. The XL3 system was obsolete and replacement parts were not available.

- All spot fire detectors and duct detectors which input to the XL3 system were changed from ionization detectors or heat detectors to a state of the art Fire Print detector. The Fire Print detector utilizes a light scattering or photoelectric detection method combined with a thermal element to discriminate between deceptive phenomena and an actual fire. In submittals to the NRC, DAEC stated that ionization detectors would be installed in the control room and control building HVAC room.

- Safety Parameter Display System (SPDS) panels did not have fire detection within the panels. Fire Print detectors have been installed in these panels.

- Some heat detectors on the XL3 system were replaced with the Fire Print detectors programmed as photoelectric spot detectors with a thermal sensor to discriminate from deceptive phenomena. The heat detectors in the air compressor building and the Low Level Radwaste Processing and Storage Facility (LLRPSF) HVAC room were replaced with new heat detectors.

- Smoke detectors were added to the battery corridor to provide prompt detection of fire and provide detection capability during fire door impairments.

- The LLRPSF annunciator panel was removed.

- Bells, horns, manual stations and addressable relays were replaced with new equipment.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The fire detection system is not an accident or fire initiator. This activity did not increase the consequences of an accident evaluated previously in the SAR. The replacement of an obsolete system and addition of new detection capability reduces the

consequences of fire. The probability of a malfunction was not changed, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. Consequences of malfunction of equipment important to fire safety were reduced by replacing an obsolete system and installing new detectors. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. This change did not reduce the margin of safety as defined in the basis for any Technical Specification. Fire protection systems are not included in the Technical Specifications.

SE 99-023 (Revision 1) **Addition Of Isolation Valve and Vent To Containment Atmosphere Dilution (CAD) System**

Description and Basis of Change

This EMA added a second isolation valve to the Containment Atmosphere Dilution (CAD) System header to support maintenance activities. In addition, a vent system was added which includes double isolation valves. The CAD System did not have a proper vent system and it took several hours to vent for system maintenance. This modification does not inhibit the system from performing its intended function, and it is an improvement to the existing system.

Evaluation Summary

This modification installed a second isolation valve, the vent line and vent valves to meet existing pipe class specification. This modification did not affect functions or requirements of CAD system due to design and operating restraints. The valves are manually operated in accordance with appropriate procedures. This modification did not increase the probability of occurrence of a malfunction of equipment important to safety. No failure modes were created by the addition of an isolation valve and a vent line. This modification did not increase the probability or consequences of an accident already defined and it did not create a new accident. This activity installed only passive components, which do not adversely affect the safety significance of CAD or increase the probability or consequences of an accident previously evaluated in the SAR. The margin of safety as defined in the basis for any Technical Specification was not reduced.

SE 99-024 Installation Of Test Connections For Containment Atmosphere Control System Valves

Description and Basis of Change

Test connections were installed for air operated valve (AOV) diagnostic testing on Torus Vent Line Isolation Valves, Drywell Vent Line Isolation Valves, Torus and Drywell Purge Isolation Valves, Reactor Building to Torus Vacuum Breakers, and Hard Pipe Vent Line Valves. (Plans are to install the test connections for an Inboard Drywell Vent Bypass Valve during RFO 18). The use of these test connections is controlled by procedure or maintenance instruction. The AOV diagnostic testing is performed during normal stroking of the valve or during the normal surveillance. The design safety function of the Torus Vent Line Isolation Valves, Drywell Vent Line Isolation Valves, Torus and Drywell Purge Isolation Valves, and Reactor Building to Torus Vacuum Breakers is to close to isolate containment. Additionally, the Reactor Building to Torus Vacuum Breakers have a safety function to open to allow the vacuum breakers to function to prevent primary containment failure due to an external pressure difference of greater than 2 psid. The Torus Hard Pipe Vent has no automatic safety function and must be manually operated.

Evaluation Summary

The test connections meet the same requirements as the existing tubing and are passive in nature. The installation of the test connections does not prevent the valves from performing their safety function as designed. Installation of the test connections and test connection isolation valves, and the use of the test connections during normal stroking of the control valves or during surveillance can not prevent the control valves from going to their fail safe position as designed. These systems have redundant isolation valves and are not intended to mitigate an accident. Based on this information there are no credible ways of increasing either the probability of occurrence of an accident or the consequences of any of the accidents evaluated in the SAR based on this modification. Since the new equipment meets the same requirements of the existing equipment, there is no increase in the probability of occurrence or consequences of a malfunction of equipment important to safety previously evaluated in the SAR. Since these components are not used to mitigate an accident, the installation of the test connections on these control valves can not increase the possibility of an accident of a different type than previously evaluated in the SAR. There is no possibility that this activity will create a malfunction of equipment important to safety of a different type than previously evaluated in the SAR. Because of the mechanical and electrical separation requirements, failure of the tubing or test connections of one

control valve could not affect the redundant control valve. Two barriers in series are provided for each penetration so no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. Therefore, the margin of safety was not reduced.

SE 99-031 Installation Of Test Connections For CRD Scram Discharge Volume Vent And Drain Valves

Description and Basis of Change

This EMA installed four test connections, isolation valves, and caps off the airline that supplies the actuators of the Scram Discharge Volume Drain Valves, and Scram Discharge Volume Vent Valves. These four air operated valves are part of the AOV Program and are required to be diagnostically tested to verify valve performance. The use of these test connections is controlled by procedure or maintenance instructions. The AOV diagnostic testing is performed during normal stroking of the valve or during the normal surveillance. The design safety functions of the Scram Discharge Volume Drain Valves, and Scram Discharge Volume Vent Valves are to fail close to provide system pressure boundary and to provide an isolation function for the scram discharge volume. The non-safety related application of these valves is to provide a drain and vent for the scram discharge volume to allow the escape of fluid from the scram discharge volume during normal plant operation. Although allowing fluid to escape is not a safety function, it is critical to maintain a low fluid level in the discharge volume.

Evaluation Summary

Since the installation and operation of the test connections can not prevent the valves from going to their fail safe position as designed there are no credible ways of increasing either the probability of occurrence of an accident or the consequences of any of the accidents evaluated in the SAR. There are no credible failures that could increase either the probability of occurrence or the consequences of a malfunction of equipment important to safety as evaluated in the SAR. There are no credible failures that could create the possibility of an accident not previously evaluated, or increase the possibility of malfunction to any equipment important to safety not previously evaluated. Since the installation and operation of the test connections can not prevent the valves from going to their fail safe position as designed there is no possibility of reducing any margin to safety as defined in the basis of any Technical Specification.

SE 99-041 Revision 1 **Emergency Service Water (ESW) To Residual Heat Removal (RHR) Pump Seal Coolers**

Description and Basis of Change

The UFSAR, Technical Specification Bases, and other design basis documents were revised to show that there is no Emergency Service Water flow requirements for the RHR Pump Seal Coolers (i.e. the RHR Pump Seal water does not require cooling). The basis for this change is the Borg Warner Type 'U' Mechanical Seals are rated up to 450°F, which is above the maximum fluid temperature for all RHR modes of operation.

Evaluation Summary

The probability of occurrence of an accident previously evaluated in the SAR was not increased because the operation of and the integrity of the RHR Pump Seals are not an accident initiator per the SAR. The consequences of an accident previously evaluated in the SAR were not increased because the RHR pump seals will perform adequately without the requirement of ESW cooling water supplying the RHR Pump Seal Coolers. The RHR pumps are able to perform all accident-mitigating functions as originally evaluated previously in the SAR. There is no effect on the fission product barriers or dose consequences. The probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR was not increased because the RHR pumps and seals will still perform reliably. The RHR pumps and seals were not degraded in any way and are still able to perform all functions as originally evaluated previously in the SAR. The consequences of a malfunction of equipment important to safety previously evaluated in the SAR were not increased since the probability of RHR pump or seal damage was not increased. The possibility for an accident of a different type than any evaluated previously in the SAR was not created. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR because the removal of the requirement for ESW cooling for the seal water coolers only affects the mechanical seals used in the RHR pumps. Since the only credible malfunction is a seal failure, the possibility for a different or more severe failure is not increased from the current SAR analysis. The margin of safety was not reduced since there is no margin of safety defined that could be affected by the elimination of the ESW flow requirements to the RHR Pump Seal Coolers.

SE 99-045 Turbine Building Roof Replacement

Description and Basis of Change

The Turbine Building roof was replaced per an EMA. New insulation and rubber membrane materials were used in place of the old roofing insulation and membrane. A cross section of the different layers of roofing material used on the Turbine Building, Reactor Building, and Control Building were assembled together with other drawings of exterior details on an architectural drawing included in the UFSAR. The roofing detail drawings were removed from UFSAR. The roofing details were not referenced by the UFSAR. The removal of these cross sectional drawings of the roofing details from the UFSAR, will expedite and simplify further roofing improvements. The roofing detail drawings that were removed had no safety significance.

Evaluation Summary

Revisions to the UFSAR Figure did not increase the probability of occurrence of an accident previously evaluated in the SAR. The revision to the Figure removed the roofing details and left the pre-cast panels connection details in place. The roofing details were placed on a new architectural drawing. Roofing details were not required to be a part of the sketch in response to a question posed by the NRC. The roofing details that were included went beyond what was required. The exclusion of these roofing detail drawings do not affect the intent and purpose of UFSAR Figure, as it is only referenced for the connection details for the Reactor Building pre-cast panels. This change had no safety significance. The removal of the roofing detail drawings from the UFSAR Figure did not increase the consequences of an accident evaluated by the SAR, and the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. There was no increase in the probability of the occurrence of a malfunction in equipment important to safety, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. This activity did not reduce the margin of safety as defined in the basis for any Technical Specification. The roofing details are not addressed by the Technical Specifications.

SE 99-046 (Revision 1) Noble Metal Chemical Addition

Description and Basis of Change

The NobleChem™ application process for Refueling Outage (RFO) 16 was similar to the application of RFO 14. As with the first treatment, the general process was to add a platinum (Pt) and rhodium (Rh) noble metal compound to the reactor water, and then circulate the water inside the vessel for a period of time at a moderate water temperature. Additional compound was injected to replace that deposited and finally, the water was cleaned as necessary. The only significant change to the process was that the potential temperature range for treatment was expanded based on NobleChem™ treatment at other plants. The available temperature range was determined based on plant operational considerations such as the margin to the shutdown cooling isolation pressure setpoint. The basis for this change was to provide a more comprehensive application based on industry experience and data gleaned from subsequent NobleChem™ applications following the initial application at the DAEC.

Evaluation Summary

The NobleChem™ application did not increase the probability of occurrence of an accident previously evaluated in the SAR. The primary concern regarding the reactor surfaces is whether Pt and Rh could affect the course of an event by its presence on the surface or in the reactor water. Considering catalytic action, mechanical action, heat transfer, fuel clad and temporary mechanical jumpers, this activity did not increase the consequences of an accident evaluated previously in the SAR. The noble metal layer is passive and did not introduce any new equipment that could fail and cause a different type of anticipated operating transient or accident. The application equipment was connected via mechanical jumpers to plant piping. The connection point valve positions were controlled by an approved plant Tagout. Connections were made via ½ inch swageloc fittings; therefore considerations associated with the potential for draining the vessel were not applicable. Since the NobleChem™ application provides Intergranular Stress Corrosion Cracking (IGSCC) protection for certain vessel components and piping, the likelihood of a malfunction due to cracking is reduced. Consequently, the NobleChem™ application did not increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR. Deposition of Pt and Rh has been evaluated for normal operations and for the large break Loss Of Coolant Accident (LOCA). NobleChem™ treatment did not create the possibility of an accident different than previously evaluated in the SAR. The NobleChem™ application did not create the possibility of a malfunction of

equipment important to safety different than any already evaluated in the SAR. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased, and the possibility of an accident of a different type was not created. An increase in conductivity was expected due to the effect of noble metal chemistry during the application period. During and after the application, the Reactor Water Cleanup System continued to operate to remove excess ions from the reactor water and restore the reactor water conductivity limit to its normal range. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 99-049 ECP 1622 - Instrument AC System Upgrade

Description and Basis of Change

The purpose of this project was to upgrade the Instrument AC System to safety related, Class 1E, by replacing existing non-safety and obsolete circuit breaker panels 1Y010 and 1Y020 with new safety related Class 1E manual transfer switches. This project also dedicated distribution panels 1Y011 and 1Y021 and replaced the existing non-safety related breakers with new safety related Class 1E breakers. Adequate electrical isolation is provided by Class 1E breakers and/or Class 1E fuses between non-Class 1E and Class 1E loads. This change is a result of evaluations that identified that loads served by this system are safety related and that a safety related power supply was required.

Evaluation Summary

The probability of occurrence of an accident evaluated previously in the SAR was not increased. Plant conditions were maintained within the range of conditions assumed by the DAEC Accident Analysis. The consequences of an accident evaluated previously in the SAR were not increased. No change was made to any other equipment, which could cause a plant transient upon failure or which provides a protective function for plant transients. Therefore, the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. No new means for bypassing or failing radiological barriers that could result in off-site doses were created. Therefore, the possibility of an accident of a different type than those described in the SAR was not introduced. The equipment installed fulfills the required safety functions for accidents previously evaluated in the SAR and did not add equipment with any new failure modes. This change did not constitute a new type of malfunction because other potential errors affecting this system have been

previously postulated and corresponding operational practices exist to detect them. Therefore, the possibility of a malfunction of equipment important to safety of a different type than those described in the SAR was not introduced. Since this activity only involved the change out of breakers with transfer switches and replacement of non-safety related breakers, the margins of safety as defined in the basis for Technical Specifications were not reduced.

SE 99-060 Emergency Service Water (ESW) System Modification

Description and Basis of Change

An EMA removed the internals of the Control Building/Standby Gas Treatment Instrument Air Compressor 1K003 ESW/Well Water Outlet Check Valve and installed a manual isolation valve on the cooling water return line of the air compressor. This results in better isolation of the ESW System during maintenance on the air compressor.

Evaluation Summary

The ESW System and the Instrument Air System are not initiators of any accident. Therefore, this activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The only purpose of the check valve was to prevent backflow. In the modified configuration, the backflow from the Residual Heat Removal (RHR) heat exchanger outlet does not occur during normal operation because a control valve only opens when 1K003 starts and the flow from the RHR heat exchanger outlet flows toward the circulating water discharge due to least resistance. In case of any higher backpressure occurring due to unanticipated reasons, back flow can be resisted by the check valve at the inlet side of the ESW piping for the compressor. The cooling coil in the compressor is designed to withstand the backpressure corresponding to RHR outlet pressure. The modification to the piping for the installation of the new manual isolation valve was done in accordance with the applicable codes. Therefore, the system pressure integrity is assured and the ESW System and the compressor perform as before. Therefore, this activity did not increase the consequences of an accident evaluated previously in the SAR. The function of the ESW System and the instrument air compressor was not affected by this change. Therefore, this activity did not increase the probability of occurrence or consequences of a malfunction of equipment important to safety evaluated previously in the SAR. No new failure modes can be created by this change because there is no change to the flow pattern in the ESW System. Therefore, this activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The availability of the system or

components was not reduced in any way. Therefore, this activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. No safety margins, safety settings, or safety limits are defined in the Technical Specifications for the subject air compressor. This activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 99-061 ESW System Modification

Description and Basis of Change

An EMA removed the internals of the Control Building/Standby Gas Treatment Instrument Air Compressor 1K004 ESW/Well Water Outlet Check Valve. Using a check valve to prevent backflow is no longer acceptable as an isolation valve at DAEC. The existing manual valve serves the purpose for isolation when required.

Evaluation Summary

The ESW System and the Instrument Air System are not initiators of any accident. This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The purpose of the check valve was to prevent backflow. In the modified configuration, the backflow from the RHR heat exchanger outlet does not occur during normal operation because a control valve opens only when 1K004 starts. The flow from RHR heat exchanger outlet flows toward the circulating water discharge due to least resistance. In case of any higher backpressure occurring due to unanticipated reasons, back flow can be resisted by the check valve at the inlet side of the ESW piping for the 1K004 compressor. The cooling coil in the compressor is designed to withstand the backpressure corresponding to RHR outlet pressure. The system pressure integrity is assured and the ESW System and compressor will perform as before. Therefore, this activity did not increase the consequences of an accident evaluated previously in the SAR. This modification was completed in accordance with the applicable codes and the function of the ESW System and the subject instrument air compressor was not affected by the change. Therefore, this activity did not increase the probability of occurrence or consequences of a malfunction of equipment important to safety evaluated previously in the SAR. No new failure modes were created by this change because there is no change to the flow pattern in the ESW System and the modification was completed ensuring the system pressure boundary. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The purpose and function of the modified check valve is replaced by the

installed ball valve and the existing inlet check valve. The availability of the system or components was not reduced in any way. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. No safety margins, safety settings, or safety limits are defined in the Technical Specifications for the subject air compressor. Hence, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-001 Removal of Standby Gas Treatment (SBGT) Relative Humidity Indicators

Description and Basis of Change

An EMA removed from service both the "A" and "B" train SBGT humidity sensors, transmitters, and indicators. The SBGT System is designed to limit the concentrations of radioactive material in gaseous effluents released to the environment from the primary containment or the secondary containment. The SBGT electric heaters are designed to reduce the relative humidity of the air stream from 150 degrees Fahrenheit, 100% humidity, to not over 70% humidity. Instrumentation to indicate train relative humidity was not discussed in any design basis document.

The SBGT electric heater circuitry shows that redundancy exists for ensuring relative humidity in the SBGT is reduced to less than 70%. As described in the design basis, the electric heaters are designed to reduce the inlet air under any condition to less than 70%. A Temperature Differential Indicating Controller controls the differential temperature across the heater to 16 degrees Fahrenheit. These components are safety related.

Evaluation Summary

Because these activities do not affect overall system performance in a manner that could lead to an accident, the probability of an accident previously evaluated in the SAR is not increased. The electric heaters reduce the relative humidity of the incoming air to less than 70%. Removal of the humidity indicators, sensors, and transmitters only affected indication and does not prevent the SBGT electric heater from performing its design function. The carbon absorbers filtration capability is not affected. Therefore, this activity did not increase the consequences of an accident evaluated in the SAR. Since the modification does not affect any safety related circuitry, original design basis and electrical separation requirements are still met. The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the

SAR was not increased. The removal of the relative humidity indication did not challenge a fission product barrier more severely than those analyzed in the UFSAR and the NSOA. Therefore, this activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. No failure can be postulated by this modification that would create an accident of a different type. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The removal of the relative humidity indication did not introduce any new failure modes that have not been previously identified and evaluated in the NSOA or SAR. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR. This modification did not affect the heater output capability or impact the limiting conditions for operation duration. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical specification.

SE 00-003 (Revision 1) **EMA For Radwaste Collector Tank Sample Line Back Flush**

Description and Basis of Change

The Radwaste Collector Tank sample line had a history of plugging. This change added a check valve and a manual isolation valve upstream of the Floor Drain Tank Sample Flush Line Isolation Valve to tie into the Condensate Service Water System to enable back flushing of the sample line to the Radwaste Collector Tank.

Evaluation Summary

This change did not hamper the system method of taking samples. The components associated with this activity are not required for safety. The Radwaste Sample System is not an initiator of an accident. Therefore, this activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. All components meet the applicable codes; therefore their integrity has been assured. This activity did not increase the consequences of an accident evaluated previously in the SAR. The function of the Radwaste System and the subject sample collection was not affected by this change. The reliability of this system and components was not reduced in any way. Therefore, this activity did not increase the probability of occurrence or the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. No new failure modes were created by the change. This modification had no impact on the systems or components that can initiate an accident. The Radwaste Sample System is not safety related. The

availability of the system and components was not reduced in any way. Therefore, this activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The Radwaste Sample System is not required for any safety action and does not interact with safety related equipment. Therefore, this activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The Technical Specifications do not specify any margin of safety for the Radwaste Sample System or its components. Also, no surveillance tests are specified for the components and system affected by this change. All of the affected components are non-safety related. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-004 EMA For Instrument Quality Air In Metrology Laboratory (Lab)

Description and Basis of Change

The stand-alone compressor in use in the LLRPSF metrology lab was not consistently producing quality instrument air for instrument testing. The stand-alone compressor was piston operated. Oil from this compressor intruded into the air lines which then affected the quality of instrument air. By this change, quality instrument air is now routed from the plant's Instrument Air System into the LLRPSF metrology lab. To utilize the plant's instrument air, a small penetration was made on the north wall of the HVAC room in the LLRPSF into the "Snubber Testing Lab". Existing hangers were used to support the new line. Three additional valves and tubing were used to connect the plant's instrument air into the metrology lab. The plant's instrument air compressors are oil-less and do not have any oil intrusion. Instrument air from the plant's compressors is reliable and very capable to support the additional lines added into the metrology lab.

Evaluation Summary

All materials used with this modification meet the design, material, and construction standards that are applicable to the system. There is no previously evaluated accident in the SAR concerning instrument air or the HVAC of the LLRPSF. Therefore, there was no increase in the probability of a previously evaluated accident in the SAR, nor an increase in the consequences of a previously evaluated accident. Supplying the plant's instrument air to the Metrology lab did not create an increase in the chances that equipment important to safety would either malfunction or create circumstances where the malfunction of safety-related equipment would increase the consequences of a previously evaluated accident. No

additional accident scenarios were created with this modification, nor will any additional possibilities of safety related equipment failure occur because of the instrument air addition to the Metrology Lab. Instrument air is not addressed by Technical Specifications. This modification will not reduce the margin of safety of any Technical Specification.

SE 00-005 Delete Alarm Function For Turbine Supervisory Instrumentation Temperature Recorder

Description and Basis of Change

The purpose of this activity was to revise the Piping and Instrumentation Diagram (P&ID) for the Main Steam High and Low Pressure Turbines by deleting an alarm function for a temperature recorder in the Turbine Supervisory Instrumentation (TSI). The alarm function was not installed in the plant, but was erroneously shown on the P&ID. The change was required to reflect the current plant configuration based on a General Electric drawing, plant walk-down, calibration records for the subject recorder, and the Annunciator Response Procedures.

Evaluation Summary

Because the TSI is not an initiator of any previously evaluated accident, this activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The subject TSI is not required for mitigation of an accident. Therefore, this activity did not increase the consequences of an accident evaluated previously in the SAR. The components associated with the change are not required for safety and can have no adverse effect on equipment important to safety. Therefore, this activity did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. The deletion of the alarm function of the subject recorder is not critical to the operation personnel in the Control Room. Information on the temperature of the steam lines associated with the recorder is available from the recorded chart in the Control Room. Furthermore, the Turbine-Generator Controls System is not essential for the safety of the plant. Therefore, this activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. The subject system is supervisory only. No automatic functions occur due to the temperature recorder. Therefore, this activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. No new failure modes that could create any malfunction of the turbine-generator controls were identified by the deletion of the subject alarm. Therefore, this activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated

previously in the SAR. No safety margins, safety settings, or safety limits are defined in the Technical Specifications for the subject TSI System. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-006 Blocking Diode Added To 250 Vdc Input To Uninterruptible AC Inverter

Description and Basis of Change

A transient blocking diode was added in the positive 250 Vdc input lead supplying power to the 120 Volt Uninterruptible AC Power Supply Inverter. The blocking diode blocks negative voltage transients on the 250 Vdc supply to the inverter to prevent unnecessary transfers of the non-safety related Uninterruptible AC Power system loads from the inverter to its backup Uninterruptible AC Regulating Transformer. The diode and the associated isolation fuses are sized to be able to continuously carry more than the maximum design input current for the inverter. There was no increase in the current supplied from the 250 Vdc System to the Uninterruptible AC Power System inverter.

Evaluation Summary

There was no adverse affect on the non-safety related Uninterruptible AC Power System as a result of the blocking diode installation since there was no increase in the current supplied from the 250 Vdc System to the Uninterruptible AC Power System inverter. In the event the inverter loses input power, the Uninterruptible AC Power System loads are automatically transferred to the backup regulating transformer. Even if the Uninterruptible AC Power System loads lost power it would not create the possibility of, or increase the consequences of an accident. The blocking diode installation is downstream of the safety related 250 Vdc System boundary which is at the load side of the feeder circuit breaker. Isolation fuses were installed upstream of the blocking diode (downstream of the feeder circuit breaker) to add additional assurance of electrical isolation between the safety related 250 Vdc system and the non-safety related 120 Volt Uninterruptible AC Power Supply Inverter. The isolation fuses are sized to ensure that a down-stream fault will not result in a loss of power to safety related 250 Vdc loads. The fuses supplement the feeder circuit breaker for meeting the requirements for isolation between non-class 1E and class 1E power circuits. The isolation fuse installation meets the applicable DAEC seismic requirements. No failure of the 250 Vdc system or of the non-safety related Uninterruptible AC Power System increases the probability or consequences of an accident or of a malfunction of equipment important to safety. All safety systems and components

powered by the 250 Vdc system are backed-up by systems or components powered from other sources. The addition of isolation fuses assured that the proposed blocking diode installation had no affect on the availability of the 250 Vdc System. Since the proposed modification is outside the 250 Vdc System boundary as identified in the SAR and additional electrical isolation is being added, there is no reduction in the margin of safety provided by the systems supported by the 250 Vdc System.

SE 00-008 Control Rod Drive (CRD) Hydraulic System Piping

Description and Basis of Change

The purpose of this activity was to revise drawings regarding the discharge piping of the relief valves for CRD pumps suction, to reflect the actual plant configuration. This change increased the size of the discharge piping of the relief valves for the CRD pumps suction from 1 inch to 1½ inch. This activity also changed the piping configuration so the discharge from the relief valves is connected to the sump inlet pipe (MRD class) separately rather than through a common HBC class piping. These changes were needed due to errors on the drawings which existed from the time of original plant construction.

Evaluation Summary

The components associated with this change are not required for safety and can have no adverse effect on equipment important to safety. Therefore, this activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The subject relief valve discharge piping is not required for mitigation of an accident. This activity did not increase the consequences of an accident evaluated previously in the SAR. This activity did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. Because the piping conforms to applicable codes, the integrity of the system pressure boundary is assured. This activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. Changing the pipe size and relief valve discharge piping configuration do not introduce any new failure modes. Therefore, this activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The system functions as before. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. No component mentioned in the DAEC Technical Specifications is affected by this change. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-010 Mechanical Jumper Bypassing Heater In Demineralized Service Water System

Description and Basis of Change

This activity involved installing a mechanical jumper (hose) around the Demineralized Water Storage Tank Heater to allow the heat exchanger to be isolated and inspected. This jumper was required to maintain a minimum flow path for the Demineralized Water Transfer Pumps. The water going through the hose was low pressure and low temperature. In the unlikely event the hose failed, it was unlikely the leak would have gone unnoticed long enough for the Demineralized Water Storage Tank to empty, which would have made the Demineralized Service Water System inoperable. However, even if the system were to become inoperable, there would have been no safety related consequences. Furthermore, there was very little risk of the water in the Demineralized Water Storage Tank freezing, however the temperature sensing instruments were still in service to alert Operations of the freezing potential during the time the jumper was installed.

Evaluation Summary

The installation of the mechanical jumper did not increase the possibility of occurrence of an accident evaluated previously in the SAR. The Demineralized Service Water System can not initiate an accident and is not a safety related system. This activity did not increase the consequences of an accident evaluated previously in the SAR. The Demineralized Service Water System does not perform any accident mitigating function. The probability of occurrence of a malfunction of equipment important to safety was not increased. The Demineralized Service Water System can not impair components or systems important to safety. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. The possibility of an accident of a different type than any evaluated previously in the SAR was not created. The Demineralized Service Water System can not initiate an accident and a change in the flow path from the Demineralized Water Transfer Pumps to the Demineralized Water Storage Tank did not change this fact. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The margin of safety as defined in the basis for any Technical Specification was not reduced. The Demineralized Service Water System has no impact on systems or components that maintain the margin of safety at DAEC.

SE 00-012 Well Water Chlorine Concentration Recorder Removal

Description and Basis of Change

The well water chlorine concentration recorder was removed since it was not used and was not required. The chlorine concentration is still monitored using the analyzer currently feeding the recorder, by tracking the amount of chlorine injected into the system, and by samples obtained by the chemistry department.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident previously evaluated. The changes to the Well Water System did not increase the consequences of an accident previously evaluated in the SAR. The Well Water System is not required for the mitigation of an accident. Chlorine usage and levels in well water is still monitored. The ability of the Well Water System to maintain drywell temperature was not affected and the possibility of drywell leakage was not increased. This change did not increase the probability of occurrence of a malfunction of any equipment. The system still operates in the same manner as it did previously. The consequences of a malfunction of equipment important to safety are not increased. The possibility of an accident of a different type than any previously evaluated in the SAR is not increased. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR. There are no Technical Specifications specifically related to the affected system. The margin of safety as defined in the basis for the Technical Specifications was not affected.

SE 00-013 Change In Grid Reliability Region

Description and Basis of Change

The formation of Alliant Utilities resulted in large portions of the service territories extending into both the Mid-American Interconnected Network (MAIN) and Mid-continent Area Power Pool (MAPP) reliability regions. To better ensure a consistent and coordinated set of guidelines for grid system operation and administration, Alliant Utilities has consolidated its membership in to a single reliability region – MAIN.

Evaluation Summary

Consolidation of membership to the MAIN regional electrical reliability council did not involve any physical design change to the bulk electric

system or its equipment. There are some variations between the guidelines and standards of the various Reliability Regions/Councils. However, all of the regions are under the purview of the North American Electric Reliability Council (NERC) and these variations simply represent selection of different, but acceptable, alternatives to achieve the same goal – high electric system reliability. This change does not affect any plant systems or equipment. MAPP and MAIN are different members of the same NERC organization. They have the same goals and are functionally equivalent from a grid reliability/stability perspective. Therefore, this activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. This activity did not increase the consequences of an accident evaluated previously in the SAR. This change did not affect design or operation of any plant systems or equipment. Therefore, this activity did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. The possibility of an accident of a different type than any evaluated previously in the SAR was not created. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The margin of safety as defined in the basis for any Technical Specification was not reduced.

SE 00-015 (Revision 1) **Containment Atmosphere Dilution (CAD) System Rupture Disc Removal**

Description and Basis of Change

The CAD System Nitrogen Storage Tanks had two methods of pressure relief. The method supplied by the original tank supplier was a series of rupture discs attached directly to the tanks. The rupture disc settings far exceeded the maximum working pressure of the system and were not adequate to meet the ASME code relief protection of the system. A pressure relief valve on the common header for the ten storage tanks is at a setting that ensures the design requirement. The purpose of this change was to remove the rupture discs and install a blind outlet plug for all ten vessels as recommended by the vendor. A manual isolation valve was also added between the nitrogen tanks and the relief valve.

Evaluation Summary

Removing one of the redundant safety relief capabilities (rupture discs) and replacing them with vendor recommended blind outlet plugs ensures system integrity and therefore, did not impact the probability of occurrence of an accident evaluated previously in the SAR. The CAD

System is the principal DAEC Combustible Gas Control System. It operates on the principle of limiting the oxygen concentration in the containment, following LOCA, by adding nitrogen to the containment atmosphere, thus diluting the oxygen concentration to less than the flammability limit of 5% by volume. The removal of the rupture discs and replacement with vendor recommended blind outlet plugs, assures system integrity. Therefore, this change did not adversely affect the ability of the CAD System to perform its safety function and it did not increase the radiological dose consequences of an accident evaluated previously in the SAR. The function and purpose of the blind outlet plugs are to replace rupture discs that did not meet the code requirements. The common relief device ensures the design requirement. All installations were performed per designated code requirement, so the system integrity is assured. A manual isolation valve was installed between the nitrogen tanks and the pressure relief valve. This valve is normally open and has been added to the Locked Valve List. This activity did not increase the probability of occurrence or consequences of a malfunction of equipment important to safety evaluated previously in the SAR. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. No failure modes could be created by this activity. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The CAD system is manually initiated, and its operability is not affected by removing unneeded rupture discs or installing blind outlet plugs. This activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-016 Control Rod Drive (CRD) System Flow

Description and Basis of Change

This activity addressed the discrepancy between the CRD operating cooling flow (0.47 gpm/drive) in the plant, and the CRD Process flow Specification of 0.34 gpm/drive given in the plant drawings/specifications. The plant changes resulting in the above flow rate were made during 1978 in response to GE SIL200 with Supplements 1 and 2, regarding the thermal fatigue stress cracking at the CRD return nozzle. However, some plant drawings/specifications were not updated to reflect the change causing the subject discrepancy. This activity revised these drawings/specifications and also addressed the concern on the vessel nozzle; from the standpoint of thermal fatigue stress due to the increase in cooling water flow rate.

Evaluation Summary

The CRD cooling water flow rate during normal operation was increased. The CRD cooling water system cannot create or mitigate an accident, and an increase of 0.13 gpm in CRD cooling flow has not affected the drive performance during normal operation or scram performance. This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The CRD cooling water system is not required for mitigation of an accident. Therefore, this activity did not increase the consequences of an accident evaluated previously in the SAR. The impact on the stresses from thermal cycling due to the increased CRD cooling water flow was reviewed and no impact found. Therefore, this activity did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. The increase in the flow of CRD cooling water does not affect any component that is required to mitigate an accident. Therefore, this activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. The impact on the reactor vessel nozzle stresses due to the change was been evaluated and none found. The system functions as before. No new failure modes were created. Therefore, this activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. No component mentioned in the DAEC Technical Specifications was affected by this change. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-017 Control Building HVAC Pneumatic Relays

Description and Basis of Change

Previously the Control Building Humidity Control Subsystem was prevented from operating because the setpoints for the Control Building HVAC Pneumatic Relays were set too low. This prevented the humidity control subsystem of Control Building HVAC from controlling the building's relative humidity to provide humidified air in the winter months. This modification increased the pressure setpoints to allow the humidifier to cycle on during low humidity periods. The setpoints were removed from a drawing and respective prints. The setpoints are documented and controlled per the Setpoint Control Program and maintenance records process.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. The Control Building ventilation humidity control subsystem is not an accident initiator. Its purpose is to provide personnel comfort in the form of humidified air in the Control Building. Modifying the setpoint for the pneumatic relays to allow for a wider range of humidity control did not have any affect on any accident initiating systems. There are no components in this system whose failure could be the cause of a postulated accident. Therefore, this modification did not increase the probability of an accident evaluated in the SAR. The Control Building HVAC system and particularly the humidity control system are classified as a support system. The purpose of the system and resulting modification are not associated with an accident discussed in the SAR and accordingly this modification did not increase the consequences of an accident evaluated in the SAR. The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. A malfunction of any one component in the humidity control subsystem and particularly a malfunction in the ability of the subsystem to control the humidity in the building would not increase the probability of a malfunction of equipment important to safety. The subsystem is not safety related and is not specifically discussed in the SAR in relation to any postulated accidents. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. The subsystem functions over a broader range and increases the comfort of occupants in the building. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than previously identified in the SAR was not increased. The margin of safety as defined in the basis for any Technical Specification was not reduced. The Control Building HVAC humidity control subsystem is not in Technical Specifications and changing the control span of humidity control did not affect any safety related system.

SE 00-019 (Revision 1) Security Modifications

Description and Basis of Change

This change added additional security barriers in the form of additional locks and permanent closure of doors, ballistic barriers, fencing, cameras, steel siding and grenade netting. This change also installed a concrete pad in the yard outside the first aid room on which to park the fire brigade hose trailer. These modifications allow the security department to operate in a

more efficient manner while still being able to adequately protect the vital areas of the plant.

Evaluation Summary

This modification enhanced the Security System by installing additional barriers, locks and cameras, none of which are initiators of any of the design accidents in the plant, nor do they affect any of the inputs considered in the accidents analyzed in the UFSAR or NSOA. The effectiveness of any of the safety systems in the plant was not decreased and these changes could not cause an accident or increase the likelihood of an accident. The probability of an occurrence of the accidents discussed in the UFSAR and NSOA is based on initial conditions and assumptions that do not depend on the end use of or interactions with the Security System. This activity did not result in a condition that increased the probability of occurrence of an accident previously evaluated in the UFSAR. Security barriers are not relied upon for recovery of an accident previously evaluated in the UFSAR. There is no increase in the radiological consequences of any previously analyzed UFSAR accident. The changes made by this activity did not change, degrade or prevent actions described or assumed in an accident discussed in the UFSAR. This activity did not alter any assumptions previously made in evaluating the radiological consequences of an accident, nor did it play a role in mitigating the radiological consequences of an accident described in the UFSAR. The modifications to the systems made by this activity have no impact on systems, structures or components important to safety, nor do they degrade the systems abilities to perform their design function. Design control does not apply to the Data Acquisition Center (DAC) except for the Fire Protection and Public Address Systems, which were not impacted by the activity of this modification. The Administration Building and the Turbine Building maintained their original design functions. The Security System has no safety significance in the UFSAR. The Security System is not an initiator of an event nor is it relied on to mitigate an event. No physical or electrical separation criteria are affected by this alteration. Compensatory measures were in place any time they were necessary during the installation of this modification. This activity did not create an accident of a different type than any evaluated previously in the SAR. There are no Technical Specifications associated with the Security System. The margin of safety as defined in the basis for any Technical Specification was not reduced.

SE 00-020 Condensate Sludge Discharge Mixing Pump Strainer Replacement

Description and Basis of Change

The Condensate Sludge Discharge Mixing Pump Suction Strainer, which was a "witch-hat" style of strainer, was replaced with a "Y" strainer to decrease the radiation dosage maintenance receives while cleaning the strainer. The time in which to clean the "Y" strainer is less than that of the "witch-hat" because the "Y" does not have to be removed from the line and the "Y" can also be back flushed. This shortens the exposure time. The "Y" strainer performs the identical function as the "witch-hat" style of strainer. A differential pressure indicator was added across the strainer to provide indication of when the strainer is in need of being cleaned. The differential pressure indicator replaced the pressure point taps being used. These changes affected the P&ID for the Radwaste Solids Handling System.

Evaluation Summary

All materials used with this modification meet the design, material, and construction standards that are applicable to the system. There was no increase in the probability of a previously evaluated accident in the SAR, nor an increase in the consequences of a previously evaluated accident. Since the Solid Radwaste System is not an initiator of an accident as described in the UFSAR, a modification to the inlet strainer to the condensate sludge discharge mixing pump did not result in an increase of consequences of an evaluated accident. A different style of strainer does not create an increase in the chances that equipment important to safety would either malfunction or create circumstances where the malfunction of safety related equipment would increase the consequences of a previously evaluated accident. No additional accident scenarios were created with this modification, nor were any additional possibilities of safety related equipment failure because the functionality of the strainer and pressure indicators remains the same and the design differences from the originals are within accepted design parameters. This modification did not reduce the margin of safety of any Technical Specification.

SE 00-021 Reactor Feedwater Pumps' Vibration Monitoring Equipment Removal

Description and Basis of Change

The reliability of the installed vibration monitoring equipment for the Reactor Feedwater Pumps was evaluated since a high failure rate and numerous false alarms resulted in very poor equipment performance. The evaluation determined that the Vibration Analysis Program was sufficient

for vibration monitoring and therefore the vibration instrumentation was removed. The instrumentation removed included the reactor feedwater pump vibration monitors and their associated components. Associated components included the reactor feedwater pump vibration switches, control room annunciators for the reactor feedwater pump high vibration alarms, and primary plant computer points for the reactor feedwater pump high vibration alarms.

Evaluation Summary

The reactor feedwater pump vibration monitoring instrumentation was a subcomponent of the reactor feedwater pump and the Feedwater Control System. It provided alarm indication only and no active input to any systems important to plant safety. The reactor feedwater pump vibration monitoring instrumentation, reactor feedwater pump and the Feedwater Control System are not safety related equipment/systems. This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. Periodic monitoring of the reactor feedwater pump vibration is performed in accordance with the Vibration Monitoring Program. The time period between inspections is evaluated and set based on results achieved from these inspections, but is normally performed at approximately one month. If an increasing trend is noted, the periodicity of inspection will be increased as necessary to ensure corrective action is taken prior to pump failure. This activity did not increase the consequences of an accident evaluated previously in the SAR. The vibration monitoring equipment could not affect any component that is important to safety nor could it create any situation where equipment important to safety could be compromised. Therefore, removing the vibration monitoring equipment did not affect the probability of occurrence of a malfunction for any equipment that is important to safety. These changes did not result in increased radiological exposure. Therefore, these changes did not increase the consequences of a malfunction of any equipment important to safety previously evaluated in the SAR. The possibility of an accident of different type and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. There are no Technical Specifications or Technical Specifications bases associated with the Feedwater Control System vibration monitoring instrumentation. The margin of safety was not affected by these changes.

SE 00-022 Radwaste System Auto-flush Function Removal

Description and Basis of Change

The purpose of the automatic flush in the Solid Radwaste System is to prevent piping from becoming plugged with resin that is transferred from one tank to another. The flush will "rinse" any resin that may still be in the line once the resin transfer is completed. The purpose of this EMA was to remove the auto-flush function from part of the Solid Radwaste System logic. The auto-flush function was removed from the Condensate Phase Separator Tanks and the Sludge Tanks of the solid Radwaste System. This change also installed three hand switches in the Radwaste Control Room panel that allow the Radwaste Operators to select if the auto-flush function is On or Off. Information was added to the applicable Radwaste Handling Procedures that instruct the Operator to manually initiate a flush once the resin transfer evolution is complete, or if the time between resin transfer exceeds a pre-determined duration.

Evaluation Summary

The auto-flush function of the Radwaste System is not an initiator of any previously evaluated accident, nor is it relied on for recovery of an accident. Changing the logic to allow the operators to override the auto-flush function does not affect any of the inputs considered in the accident analysis in the UFSAR or the NSOA. This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR, and the consequences of an accident evaluated previously in the SAR were not increased. The auto-flush does not perform any accident mitigating function. The installation of hand switches to override the function of the auto-flush did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. This activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. The auto-flush function of the Radwaste System is not safety related and can not affect safety related systems or components. The change to the logic of this system allows the Radwaste Operators to isolate the auto-flush during transfer of liquid waste. However, when the selector switches are in the normal (ON) position, the auto-flush will function as it did before. Any postulated failure of the subject equipment cannot create an accident because all fluids are contained within the building. Therefore, this activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. Information was added to applicable Radwaste Handling Procedures that instruct the Operators to manually initiate a flush once the resin transfer evolution is complete, or if the time between transfers exceeds a pre-determined duration. No new

failure modes that could create any malfunction of this system were identified. The system functions as before. Therefore, this activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. No safety margins, safety settings, or safety limits are defined in the Technical Specifications for the auto-flush function of the Radwaste System. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-027 Nitrogen Supply To Outboard Main Steam Isolation Valves (MSIVs)

Description and Basis of Change

A new pressure control valve was installed in the nitrogen line to the outboard MSIVs. A bypass valve and isolation valves for the pressure control valve were also installed. The reason for installing the pressure control valve was due to the lack of pressure control provided by the drywell nitrogen injection pressure control valve. After nitrogen makeup was secured, pressure in the header would go to approximately 120 psig. This was above the pressure required by the outboard MSIVs. The new pressure control valve is smaller in design and will control the pressure to the outboard MSIVs within its range.

Evaluation Summary

The Nitrogen Makeup System is part of the Containment Atmosphere Control System. The Nitrogen Makeup System provides nitrogen to the outboard MSIVs, the auxiliary heating boiler deaerator, backup supply to the nitrogen compressors, and nitrogen to the containment purge line to makeup for containment losses and maintain the inert atmosphere during normal operation. None of the criteria specified in the DBDs were affected by this activity. All of the accidents in the UFSAR were reviewed with respect to this modification. The installation of the pressure control valve, pressure control valve isolation valves, and bypass valve can not prevent the outboard MSIVs from going to their fail safe position as designed or increase the possibility of them closing when not desired. There are no credible ways of increasing either the probability of occurrence of an accident or the consequences of any of the accidents evaluated in the SAR. There are no credible failures that could increase either the probability of occurrence or the consequences of a malfunction of equipment important to safety as evaluated in the SAR. Since the installation of the pressure control valve, pressure control valve isolation valves, and bypass valve can not prevent the MSIVs from going to their fail safe position as designed or increase the possibility of them closing when not desired, there are no credible failures that could create the

possibility of an accident not previously evaluated or create the possibility of malfunction to any equipment important to safety not previously evaluated. The margin to safety as defined in the basis of any Technical Specification is not reduced.

SE 00-028 Larger Batch Size For Cycle 18 Core Design

Description and Basis of Change

The Fuel Cycle Management Summary which was conducted for Cycle 18 showed the necessity to design future cores with reload sizes of greater than 128 bundles. This is primarily due to the core energy requirements of Extended Power Uprate (EPU) to 1912 MWth, which was not anticipated to be approved by the NRC until after Beginning of Cycle 18. However, the intention was to load the Cycle 18 core with enough energy to allow operation above the limit of 1658 MWth once approval is received. Our Nuclear Fuel and Core Design Control Program limits the maximum allowed reload batch size to 128 bundles due to an assumption made in a NRC commitment referenced in our Operating License (OL). This commitment is based upon a thermal-hydraulic analysis of the Spent Fuel Pool (SFP) and its cooling capabilities. Therefore, in order to change the Program, a safety evaluation was needed to show that the SFP cooling capabilities as defined in the commitment analysis are bounding for the Reload 17/Cycle 18 reload size of 136 bundles. This change increased the allowable reload size in the Nuclear Fuel and Core Design Control Program to 136 bundles which is necessary for the design of a higher energy core (expected to be needed by mid-cycle 18). The change indirectly affected the OL since one DAEC commitment is the SFP heat loading analysis that assumes a reload size of 128 bundles or less. This safety evaluation ensured that for the RFO 17/Cycle 18 reload, a batch size of 136 bundles is acceptable and bounded by our current SFP heat loading analysis.

Evaluation Summary

No accident or system in the SAR depends upon the reload size or the SFP temperature. The addition of 8 more bundles in the SFP during RFO 17 did not cause a state for which the DAEC is not currently analyzed. The probability of an accident evaluated previously in the SAR was not increased since the Refuel Accident does not assume a maximum bulk SFP temperature and makes no assumption of the number of fuel assemblies in the SFP. The consequences of an accident evaluated previously in the SAR were not increased and the margin of safety as defined in the basis for any Technical Specification was not reduced since fewer bundles in the SFP than assumed in the analysis would result in a

lower maximum bulk SFP temperature which is still below the administrative limit of 164.6 °F. The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased because the number of bundles and their exposure is lower than assumed, thus challenges to the fuel cladding or the Fuel Pool Cooling and Clean-Up (FPCCU) System are not increased. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR was not increased since the SFP heat loading analysis determined the required response time to provide makeup water was 5 hours if only one train of FPCCU was available and this would not decrease unless the SFP maximum temperature increased which is not the case. The possibility of an accident of a different type than any evaluated previously in the SAR was not created because the handling of 8 more bundles does not create a new type of event and the extra spent fuel stored in the SFP would not increase its heat loading beyond the analyzed limit. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created since storage of less than the assumed number of bundles in the SFP does not challenge the SFP Cooling System or the fuel cladding in a different way than what they are designed or licensed for.

SE 00-031 Replacement Of Coolers On Main Transformers

Description and Basis of Change

This activity replaced the coolers on the main transformers to increase the rating from 600 MVA to 660 MVA due to long lead times for new transformers and the desire to increase the plants capacity. The new coolers are able to dissipate more thermal energy, which allows the transformer to be up-rated to 660 MVA without exceeding any limits on the transformer. This activity did not increase the electrical load demand or increase the oil flow through the transformer. The control circuits on the existing cooler units were used to control the new coolers.

Evaluation Summary

The NSOA does not include the main transformers as a part of its safety system. This activity had no effect on any safety related system. The main transformer and all related equipment are Quality Level 4. The new coolers exceed the previous coolers' ability to cool the transformers. The pumps are more reliable due to upgraded bearing technology and provide the same pressure as the previous pumps. The coolers themselves can dissipate more thermal energy. This allows the rating of the transformer to be increased to 660 MVA. The control and instrumentation configuration are the same, while the load on the electrical system decreased in amperes,

exceeding no design or test limits. This activity did not affect overall system performance in a manner that could lead to an accident or cause an accident previously evaluated. There was no increase in the probability of occurrence of an accident. This activity did not increase the consequences of an accident evaluated previously in the SAR. Replacing the main transformer coolers had no affect on the radiological consequences of any accident analysis described in the UFSAR. This activity did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. This activity meets and exceeds the original design specifications for the coolers. This activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR, and the possibility of an accident of a different type than any evaluated previously in the SAR was not created. Replacement of the main transformer coolers did not increase the probability of a transformer failure. The new coolers are designed to dissipate more energy than the deteriorating original coolers. The new coolers are controlled by the same control circuit, which provides the same safety measures as the previous design. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The panels that supply the main transformers with power are also non-safety related. The margin of safety as defined in the basis for any Technical Specification was not reduced. There are no margins of safety identified in the Technical Specifications for the main transformers.

SE 00-032 **ECP 1616 – Residual Heat Removal (RHR) Heat Exchanger Outlet Valves**

Description and Basis of Change

The RHR heat exchanger outlet valves on the Residual Heat Removal Service Water (RHRSW) side are designed to provide a set differential pressure between the RHRSW System and the RHR System. This differential pressure prevents potentially contaminated water leaking from the RHR System into the RHRSW System. The control logic for these outlet valves consisted of a differential pressure transmitter, a pressure differential indicating controller (PDIC), and a valve position modulator. Problems with the PDICs have caused 12 unplanned Limiting Conditions For Operation (LCOs) over the past ten years. The LCOs have averaged six hours. The PDICs were operated in manual mode to prevent problems associated with automatic control. ECP 1616 replaced the pressure differential indicating controllers and position modulators with three-position (CLOSE-NORMAL-OPEN), spring return to NORMAL from CLOSE and OPEN positions, hand switches. The operators manually adjust the differential pressure between the RHR System and the RHRSW

System using the hand switch and information provided by the differential pressure indicator. The automatic control feature of the RHR System to RHRSW System differential pressure was eliminated.

Evaluation Summary

Since the alarm setpoint is not changed the operator's response time to adjust the differential pressure, if required, is not changed. Therefore, the system function is not altered. The capability of the RHRSW System to act as an auxiliary system is not compromised by this modification. The capability of the RHR System to mitigate any accident is not adversely affected by this modification. This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. There is no adverse affect on the fission product barrier or dose. Therefore, this activity did not increase the consequences of an accident evaluated in the SAR. The overall function of the RHRSW System was not affected by this activity. The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. This activity simplified the differential pressure control circuit, maintained divisional separation, and provided adequate redundancy. The new hand switches provide the same function as the automatic controller placed in manual mode. Therefore, no new failure modes are introduced by this activity. This activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. The possibility of circuit failure due to PDIC malfunction was eliminated. In case of a malfunction of the circuit in one division, the circuit in the redundant division will carryout its required function, as redundancy is not adversely affected by this modification. The lack of an automatic control mode is not significant since the automatic mode was not credited for any SAR accident. This activity did not create the possibility of an accident of a different type or the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The capability of the RHRSW System to support the various modes of the RHR System during the normal plant operation and during an event is not compromised by this modification. This activity did not reduce the margin of safety as defined the basis for any Technical Specification.

SE 00-035 General Service Water (GSW) System Temporary Modification

Description and Basis of Change

The 'B' Isophase Bus Duct Cooler GSW Cooling Water Low Flow Alarm Flow Switch was replaced with a cap/plug. This allowed operation of the 'B' Isophase Bus Duct Cooler until a replacement flow switch could be procured and installed. Normally only one Isophase Bus Duct Cooler is

required to be in operation. Therefore, one loop could be isolated to allow installation of the cap/plug in the Isophase Bus Duct Cooler without affecting plant operation.

Evaluation Summary

The Isophase Bus Duct Cooling System or GSW System are not initiators of any accidents previously evaluated in the SAR. This modification did not affect equipment important to safety, therefore, the installation of the cap/plug did not affect or increase the probability of occurrence of an accident evaluated previously in the SAR. The GSW/Isophase Cooler System has the same pressure rating as before the installation of the temporary modification, therefore, the consequences of an accident evaluated previously in the SAR were not increased. Additionally, none of the GSW System components are safety related, therefore a failure would not increase the consequences, or probability of occurrence, of a malfunction of equipment important to safety evaluated previously in the SAR. The pipe plug restored the pressure boundary to the GSW System. This did not create the potential for a new failure mode to equipment important to safety. This modification did not affect the operation of any system whose malfunction could result in an accident of a different type than any previously evaluated in the SAR or the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. There are no Technical Specification requirements specific to the GSW pressure boundary or for the GSW System. This activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-038 (Revision 1) Turbine First Stage Pressure Switches Setpoint Change

Description and Basis of Change

Four pressure switches monitor first-stage turbine pressure and provide a logic input to initiate an automatic bypass for the Reactor Protection System (RPS) trips (scrams) for Turbine Control Valve/Turbine Stop Valve (TCV/TSV) fast closure and the concurrent trip of the Reactor Recirculation Pumps (i.e., End-of Cycle Recirculation Pump Trip (EOC-RPT)). This automatic bypass (P_{bypass}) occurs when the turbine first-stage pressure corresponds to approximately 30% of rated thermal power (RTP). The RTP of the DAEC reactor core is 1658 MW thermal. The switches have a pressure trip setting of 185.1 psig (with head correction). Following installation of a new high pressure (HP) turbine for the Power Uprate (PUP) and the re-introduction of second stage Moisture Separator Reheater (MSR) operation, it was determined that 30% RTP will correspond to 136.3 psig (with head correction) for the four pressure

switches and the trip setting is to be changed to this value. The RPS and EOC-RPT bypass is unaffected because they initiate at less than 30% RTP, as previously analyzed in the SAR. This setpoint change will not alter the design, function, or method of performing the turbine first stage pressure RPS and EOC-RPT trip bypass function. Because of the installation of the new HP turbine and the re-introduction of second stage MSR operation, the revised setpoint of the Turbine First Stage Pressure Switches will have the same impact on plant operation as the setpoint used with the previous HP turbine, without second stage MSR operation. The setpoint change for the turbine first stage pressure RPS and EOC-RPT trip bypass function will still have an analytical limit (AL) of 30% RTP equal to 497.6 MW thermal. The setpoint change is within the design capability of the (already) installed pressure switches, which remain in the same location, with their surrounding environment unchanged. The supporting setpoint calculation conforms to the UFSAR requirements for a safety related setpoint.

Evaluation Summary

This activity does not increase the probability of occurrence of an accident evaluated previously in the SAR. The switches do not initiate any event in the SAR. They are an indirect mitigative feature in response to a turbine trip or generator load reject event, by ensuring the direct RPS trip on TCV/TSV closure and EOC-RPT occur as assumed in the SAR. Because the Core Operating Limits Report (COLR) for Cycle 18 operation utilized the same reactor/turbine heat balance for the new HP turbine and second stage MSR operation as the turbine first stage pressure setpoint calculations, the corresponding transient analysis validated the current AL of 30% RTP for P_{bypass}, which is the underlying basis for the EOC-RPT and RPS trip bypass AL of 30% RTP. Consequently, there is no effect on the previously evaluated transient response and therefore no increase in the consequences of an accident previously evaluated in the SAR. This activity does not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. The switches will still perform their intended function as described in the SAR because the RPS and EOC-RPT trip bypass occurs as previously analyzed (<30% RTP). The original design practices are unaffected (i.e. separation criteria, seismic, environmental) and the setpoint change is within the design capability of the existing pressure switches, which remain in the same location with the same surrounding environment. Therefore, there is no increase in the likelihood of switch failure due to the setpoint change. In addition, the calibration frequency does not need to be revised, so there is no increase in the probability of unacceptable setpoint drift. This activity does not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. A malfunction of the

pressure switches, either failure to trip (disengage the bypass) or non-conservative setpoint (either miscalibration or excessive drift), would not result in increased consequences because the plant response which would occur following such a malfunction would not be significantly different, as the AL of 30% RTP has been validated for the new reactor/turbine heat balance conditions. This activity does not create the possibility of an accident of a different type than any evaluated previously in the SAR. These switches can not, by themselves, initiate any plant event. The bypass is annunciated in the main control room. Thus, failure to clear the bypass at ≤ 30% RTP upon startup would not go undetected. In addition, this logic is routinely checked, so any failure would not go undetected for a prolonged period. This activity does not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The setpoint change is within the design capability of the (already) installed pressure switches, which remain in the same location with the same surrounding environment and on the same surveillance frequencies. This activity does not reduce the margin of safety as defined in the basis for any Technical Specification. Because the COLR for Cycle 18 operation utilized the same reactor/turbine heat balance for the new HP turbine and second stage MSR operation as the turbine first stage pressure setpoint calculations, the corresponding transient analysis validated the current AL of 30% RTP for P_{bypass}, which is the underlying basis for the EOC-RPT and RPS trip bypass AL of 30% RTP in Technical Specifications and the fuel thermal limits in Technical Specifications.

SE 00-039 ECP 1640 – Replacement of Circulating Water Pumps

Description and Basis of Change

This modification replaced both Circulating Water Pumps. The pumps required new impellers and impeller rings. It was advantageous from a cost and scheduling standpoint to replace the pumps rather than repair them. The new pumps have the same basic configuration and outline as the old pumps. The new pumps have slightly higher head and flow. The higher capacity compensates for shortcomings in the old pumps and provides margin for power up-rate. The new pumps have an enclosed stainless steel impeller to reduce erosion and expedite set-up.

Evaluation Summary

Regardless of any design changes, the pumps perform the same function in the same manner as the old pumps. Therefore, this activity did not increase the probability of an accident evaluated previously in the SAR. No fission product barrier was challenged by this modification. The two

possible accident scenarios related to this modification both involve over-pressurization of the condenser. The condenser is designed to handle the increased head provided by the new pumps. Therefore, this activity did not increase the consequences of an accident evaluated previously in the SAR. The Circulating Water System does not perform any safety related function. The safety related systems that interface with the Circulating Water System were unaffected by this modification. Therefore, this modification did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. The Residual Heat Removal Service Water (RHRSW) System and the Emergency Service Water (ESW) System discharge into the Circulating Water System after they have performed their safety related function and are unaffected by this modification. Therefore, this modification did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. Although the new Circulating Water Pumps provide slightly higher flow and pressure than the old pumps, their function is still to provide motive force for the water in the Circulating Water System. Therefore, this modification did not create the possibility of an accident of a different type than evaluated previously in the SAR. This modification increased the Circulating Water System flow and pressure, but they are still within the limits of the original design. Therefore, this modification did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. This activity did not affect the ability of RHRSW and ESW to provide the necessary flow and pressure. Therefore, this modification did not reduce the margin of safety as defined in the bases for any Technical Specification.

SE 01-001 Offgas System Temporary Modification

Description and Basis of Change

This temporary modification removed the interlock between the Offgas Jet Compressor Suction Isolation Valve and the Offgas Loop Seal Isolation Valves to allow the Loop Seal Isolation Valves to be opened while the Offgas Jet Compressor Suction Isolation Valve is throttled to maintain Offgas pressures. The Offgas Jet Compresssor Suction Isolation Valve is not normally used to control pressure in the Offgas System, however the control valve just downstream of the Offgas Jet Compressor Suction Isolation Valve seized at approximately 50% open. Throttling the Offgas Jet Compressor Suction Isolation Valve to maintain Offgas in the normal pressure range requires that the valve be almost closed, causing the closed limit switch to be made-up. With the closed limit switch made-up, the interlocks between the two Loop Seal Isolation Valves and Offgas Jet Compressor Suction Isolation Valve are also made-up. This causes the

Loop Seal Isolation Valves to remain closed. This temporary modification allows opening the Loop Seal Isolation Valves while maintaining Offgas pressure using the Offgas Jet Compressor Suction Isolation Valve. The auto-close signal to the two Offgas Loop Seal Isolation Valves on Offgas high pressure is not affected by this temporary modification. The UFSAR states that an automatic isolation of the two loop seals upstream of the Offgas Jet Compressor Suction Isolation Valve occurs on a closure of the valve. However, this function of the Offgas System is not a safety function. In the Abnormal Operating Procedure (AOP) for Loss of Offgas one of the immediate actions is to place all of the Loop Seal Valves in the closed position. Automatic closure of the Offgas Jet Compressor Suction Isolation Valve causes a Loss of Offgas and this is not affected by the temporary modification.

Evaluation Summary

This activity did not increase the probability of an accident evaluated previously in the SAR. The Offgas System is not an initiator of any accidents evaluated in the SAR. The Offgas System does not perform any nuclear safety related activity and is not used to prevent any accident. The removal of the automatic isolation of the two loop seals from the closure of the Offgas Jet Compressor Suction Isolation Valve did not increase the consequences of an accident previously evaluated in the SAR. This change did not affect the operation of other plant systems designed to mitigate the consequences of previously evaluated accidents. Therefore, this change did not increase the consequences of any accident. None of the equipment in the Offgas System is important to safety. No failure of the affected equipment could cause a failure of any structure, system or component to perform its intended safety function. The Loss of Offgas AOP states that the all loop seals should be placed in the closed position as an immediate operator action if the Offgas System should isolate, and this should ensure the Loop Seal Valves are closed. Therefore, this activity could not increase the probability of a malfunction of equipment important to safety evaluated in the SAR. This change did not affect the operation of other plant systems designed to mitigate the consequences of previously evaluated accidents. The removal of this auto-isolation could not increase the consequences of a malfunction of equipment important safety. This change did not introduce any new failure modes. The Offgas Jet Compressor Suction Isolation would still isolate on low steam pressure and low steam flow, however, the loop seals would not automatically isolate. However, this function is not a safety function. Therefore, this change did not create the possibility of an accident of a different type than evaluated previously. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. These changes did not affect any Technical

Specification requirements or their bases. Therefore, the margin of safety as defined in the basis for Technical Specifications was not reduced.

SE 01-002 ECP 1639 – General Service Water (GSW) To Generator Hydrogen Coolers Piping Replacement

Description and Basis of Change

This modification replaced existing GSW cooling lines with larger diameter pipe to provide additional cooling capability for the Generator Hydrogen Coolers in support of the Power Up-rate Program. The four inch nominal diameter GSW supply and return piping to/from the Generator Hydrogen Coolers was replace with six inch nominal diameter carbon steel pipe and valves. The ten inch diameter supply and return headers were replaced from the closest joint with new ten inch diameter manifold headers with appropriate six inch diameter nozzles. The routing of the new lines is similar to the previous piping configuration. The new lines include six inch diameter raised-face flanges to mate with the replacement Hydrogen Cooler bottom head flanges. The location of the isolation gate valve and the throttling globe valve in each branch line were swapped with each other to ensure GSW pressure will be less than the generator hydrogen pressure as recommended by General Electric. Four new local pressure indicating instruments and accompanying isolation valves and a new local temperature indicator were installed in the modified GSW supply side piping to monitor process performance.

Evaluation Summary

The probability of occurrence of an accident previously evaluated was not increased as the design maintains the pressure boundary and has been evaluated and meets appropriate design, material, and construction standards to the system and the seismic requirements. The consequences of an accident are unchanged as the design maintains the pressure boundary. There is no equipment important to safety affected by this modification. The probability of occurrence or consequences of a malfunction of equipment important to safety previously evaluated were not increased. The replacement of existing GSW piping with larger diameter piping provides additional cooling water capacity to the Generator Hydrogen Coolers. This modification did not introduce the possibility of a change in the probability of a malfunction. The piping replacement was not an initiator of any new malfunctions and no new failure modes were introduced. The possibility of a different type of accident or malfunction of equipment important to safety than previously evaluated was not created. The replacement piping, valves and instruments did not create a new interface with other structures, systems or components. The margin of safety as defined in the basis for any

Technical Specification was not reduced since no Technical Specification is associated with the GSW System performance. The margin of safety for the primary containment is not affected by this modification.

SE 01-003 (Revision 1) **ECP 1636 - High Pressure (HP) Turbine and Associated Equipment Modifications**

Description and Basis of Change

This ECP replaced the HP turbine rotor, buckets, diaphragms, and nozzles; converted the turbine control valves back to partial arc admission from full arc admission; replaced the Steam Packing Unloading Valve (SPUV) with a larger capacity control valve; and added on-line monitoring of the Electrohydraulic Control (EHC) Electronic Control System parameters with the addition of optical isolator cards and current transmitters. The basis for these changes was to accommodate the increase in steam flow for future operation of DAEC at up-rated 120% of the original core thermal power and to provide on-line monitoring to facilitate power ascension testing and system tuning.

Evaluation Summary

The replacement of the HP rotor did not affect the turbine missile analysis. Operating fuel thermal limits are established based on the cycle-specific analysis. The change from full arc admission to partial arc admission and revised heat balance are evaluated as required by Technical Specifications in the Core Operating Limits Report. The installation of the optical isolator cards and current transmitters maintain the separation of the plant process computer from the EHC System. The new SPUV and controls function identically to the previously installed components. Therefore, the probability of occurrence and the consequences of an accident previously evaluated were not increased. There were no changes made to safety related equipment. The turbine control valve fast closure capability (load reject), turbine stop valve closure (turbine trip), and turbine bypass valves (Maximum Combined Flow Limit) were not affected. The evaluation of a HP turbine missile is enveloped by the Low Pressure turbine missile evaluation contained in the UFSAR. The probability of occurrence of a malfunction and the consequences of a malfunction of equipment important to safety was not increased. This activity did not change the function, operation or qualification of the equipment. An accident or malfunction of equipment important to safety of a different type was not created. This activity did not affect the basis of any Technical Specification. The setpoint for turbine first stage pressure for 30% reactor power was revised separately.

SE 01-006 (Revision 1) ECP 1647 - Feedwater Heater Bypass Modification

Description and Basis of Change

This ECP provided two throttling valves to bypass two condenser dump isolation valves on each train of the number (#) 6 Feedwater (FW) heater dump lines. These bypass valves discharge to the main condenser at a controlled flow rate to prevent flow induced vibration (FIV) of the # 5 FW heaters' tube bundles. These bypass valves provide a means of preventing any additional flow, beyond a predetermined FIV value, from entering the # 5 FW heater shell until the # 5 FW heaters can be upgraded through replacement. The # 5 FW heaters are scheduled for replacement during RFO 18, after which higher flows in the # 5 FW heater shell will be possible. An annubar flow element is included in the ECP for monitoring the flow from the # 5 FW heater during manual manipulation of the remote valve controls. This modification meets all appropriate design requirements. Technical Specifications are unaffected by this modification. This modification did not affect the design capability of the Power Conversion System, in particular, the Extraction Steam Vents and Drain and Feedwater Heaters.

Evaluation Summary

The # 6 FW heater bypass does not increase the probability of occurrence of a turbine trip or turbine load rejection as analyzed in the UFSAR. The additional control valves and manual controllers for the #6 FW heater bypass are pneumatically controlled components, which use the Instrument Air System for their motive supply. The additional load of these components is small compared to the capacity of the Instrument Air System and thus, have no impact on the Air System's reliability. Because the new flow element/indication on the #5 FW heater drain was designed to the same standards as the piping, and is utilized as an "indication only" circuit, this change did not increase the probability of any previously analyzed event. The probability of occurrence or consequences of an accident previously evaluated were not increased. This modification maintains extraction steam pressure boundary and meets appropriate design, material, construction standards, and seismic requirements. The consequences of a piping failure would be bounded by the main steamline break outside containment accident. The probability of occurrence and consequences of a malfunction of equipment important to safety previously evaluated is not increased. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR because the Extraction Steam Vents and Drain piping and pipe supports contained within the scope of this modification did not create a new interface with other structures, systems or components. All

equipment used for this modification was designed to applicable codes and standards and has been evaluated to meet appropriate requirements. This modification did not create the possibility of a different type of accident or malfunction of equipment important to safety than previously evaluated. The margin of safety as defined in the basis for any Technical Specification was not reduced since no Technical Specification is associated with the Extraction Steam Vents and Drain System performance. Therefore, this modification did not affect or reduce the margin of safety as defined in the basis for any Technical Specification.

SE 01-007 Main Steam Check Valve Cross Around Bypass Line

Description and Basis of Change

This change provided a positive means of preventing steam back-flow to the condenser through the first bypass valve leak-off line. A one-inch check valve was installed in the bypass valve leak-off line to the main turbine cross-around piping. The check valve is oriented to prevent flow from the cross-around piping back to the bypass valves. The check valve was installed in the section of pipe that is common to both bypass valve leak-off lines. This change prevents steam flow back to the condenser from the first bypass valve leak-off line through the bypass valve tailpipe. This prevents elevated temperatures in the tailpipe and increases plant efficiency. General Electric has recommended installation of this check valve in order to prevent the backflow.

Evaluation Summary

This activity did not affect the probability of any accident evaluated in the SAR. Although the bypass valve failure is considered as a failure in several transients and accidents in the SAR, this EMA did not affect the ability of the bypass valves to operate. The installation of this check valve was outside of any containment boundary and the affected piping is not assumed to or required to function during an accident. The consequences of an accident and malfunction of equipment important to safety evaluated previously in the SAR were not increased. This change did not increase the probability of a radioactive release. The installation of the check valve meets applicable standards for the class of piping and is a passive device that cannot affect the probability of the bypass valves to operate. Leakage from the bypass valve stem and bushing area is still able to reach the turbine cross-around piping during start up. Even if the check valve failed closed, there are two other leak off paths for bypass valve leakage. Therefore, the probability of failure was not increased, and the probability of a malfunction of equipment important to safety was not increased. No new malfunctions or accidents were introduced. The margin of safety as

defined in the basis for any Technical Specification was not reduced. This change did not affect any Technical Specification margin of safety.

SE 01-008 Intake Structure HVAC Modifications

Description and Basis of Change

The HVAC air supply at the Intake Structure had problems resulting from too much moisture in the air supply. During the winter months this moisture would freeze in the supply lines to the intake air dampers. These dampers would then fail in their safe position of open. With these dampers in their open position, the building temperature would drop. Automatic drain valves were added to blow the moisture out of the compressor air receiver tanks and a different type of air dryer was installed. Loss of power causes these dryers to block airflow assuring moisture laden air will not flow into the Air System. These dryers failed several times shortly after installation causing loss of air to the system. This modification added a compressed air tank with connection to an existing instrument valve to serve as an auxiliary air supply, installed check valves in the supply lines from the installed air dryers, and raised the control setpoints of the air compressor control switches of the Intake Structure HVAC System. The purpose of this back-up air supply is to allow adequate time for operator action in the event of failure of the normal Air Supply System.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR, nor were the consequences of an accident increased. The River Water Supply (RWS) System and Intake System are not accident initiators, but are required to mitigate the consequences of abnormal operational transients, accidents, and other events as described the Nuclear Safety Operational Analysis (NSOA). The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased, nor were the consequences of such a failure. This activity involved the addition of redundant equipment, a conservative change to control setpoints and correction of plant documentation. The added equipment provides more time for the operator actions described in the System Operating Instructions. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The design, function, and method of performing the function of the affected systems remains the same as described in the text of the UFSAR. The ability of the systems to perform their intended safety actions was not

impacted by this activity. There are no radiological consequences associated with this activity, and no new failure modes were introduced. The margin of safety as defined in the basis for any Technical Specification was not reduced by this activity. The ability of the RWS System and its components to perform as designed to mitigate the consequences of abnormal operational transients, accidents, and other events was not changed by this activity.

SE 01-010 Temporary Modification To Use Condenser Vacuum Pump Circuit Breaker As A Temporary Power Source

Description and Basis of Change

This change removed the Condenser Vacuum Pump from service during the refuel outage when it was not required to be operational. The pump was isolated electrically preventing operation thus complying with the Technical Requirements Manual (TRM) Limiting Conditions for Operation (LCOs) requiring the pump to be isolated during an accident. The Condenser Vacuum Pump electrical power supply was used as a temporary power supply to support outage maintenance activities. A "spare" circuit breaker was installed into the Condenser Vacuum Pump breaker cubicle and was used for providing temporary power for the outage activities. This "spare" circuit breaker provided electrical fault protection to the upstream non-essential load center bus.

Evaluation Summary

The Condenser Vacuum Pump exhaust is discharged to the Offgas Stack. The pump is required to be isolated upon the receipt of a high radiation signal from the Main Steam Line Radiation Monitoring System, to prevent high radiation gases being discharged to the atmosphere, during operational modes 1, 2, and 3. The Condenser Vacuum Pump was secured in the conservatively safe condition, preventing high radiation discharge from the Condenser Vacuum Pump. Therefore, the consequences of an accident were not increased, and the probability of occurrence of an accident was not increased. The Condenser Vacuum Pump is in service only during startup and when needed to maintain vacuum at low power during an orderly shut down. The Condenser Vacuum Pump was available and in service as needed during shutdown and startup. The temporary power loading on the non-essential load center was within the bus rating and was limited to safe and acceptable limits by the installation of a calibrated circuit breaker. The breaker limited power output and protected the load center from electrical fault conditions. Therefore, the probability of occurrence of a malfunction was not increased, and the consequences of a malfunction were not increased. The original

equipment circuit breaker was re-installed into the cubicle as part of the Temporary Modification closure. Testing closed and opened the circuit breaker and verified correct operational indications, thus verifying control logic and circuit breaker operation. Therefore, no new malfunctions were created. High radiation alarms related to the main steam line were not affected by this Temporary Modification. No margin of safety was affected during the installation of this Temporary Modification. The Technical Specifications do not address the Mechanical Vacuum Pump.

SE 01-011 (Revision 1) **ECP 1631 – Moisture Separator Reheater (MSR) Modifications**

Description and Basis of Change

This ECP designed and installed moisture separation sections, Low Pressure (LP) and High Pressure (HP) tube bundles, and Excess Steam Systems to improve the performance of the MSRs and increase plant power output. This ECP also improved the Second Stage Reheat System and restored the system to service. Modifications were made to the first and second stage, and MSR Drain System to ensure proper operation at power up-rated conditions. The MSR configuration was modified and additional instrumentation for the MSR was provided. The configuration of the Second Stage Reheat Subsystem was also modified. The significant changes to the Second Stage Reheat Subsystem included the replacement of the Steam Supply Inlet Valves, Steam Supply Inlet High Load Valves, and Steam Supply Inlet Low Load Valves. Line blinds upstream of the Steam Supply Inlet Valves were removed, and the line blind installed on the common drain line from the Second Stage Reheat Supply Lines to the main steam drain header was reversed to the open configuration. The control logic for the Steam Supply Inlet Low Load Valves was replaced with a Temperature Control System. Additionally, the drain valves to the feedwater heaters had the trim replaced. Similar changes were made on the drain valves for the First Stage Reheat Subsystem, and the drain valves for the MSR were replaced. The Second Stage Steam Supply Inlet Valves were changed to have an active function for the Main Steam Isolation Valve Leakage Treatment System (MSIV-LTS). This required the installation of reliable power and adding the valves to the Inservice Testing Program.

Evaluation Summary

This modification did not affect the design capability of the MSIV-LTS or power conversion system. The probability of occurrence of an accident previously evaluated is not increased as the modification maintains the pressure boundary design requirements and meets appropriate seismic

requirements. The re-introduction of second stage reheat does not increase the probability of occurrence of a turbine trip, either directly, via MSR drain tank high level trip, or indirectly, via a loss-of-condenser vacuum (maximum dump flow to the condenser). The various dump flows to the main condenser are not significantly different than before, in particular, during startup and placing the MSR into service. Thus, the potential for a loss of condenser vacuum is not increased. In addition, the impact of MSR operation during various valve tests, such as turbine valves and MSIVs, was evaluated and determined to not increase the possibility of a transient. The additional/refurbished control valves for the re-introduction of second stage reheat are pneumatically controlled components, which use the Instrument Air System for their motive supply. The additional load of these components is small compared to the existing capacity of the Instrument Air System and thus, have no impact on the Air System's reliability. Thus, the probability of a transient initiated by a loss-of-air is not increased. Therefore, the probability of occurrence of an accident evaluated previously in the SAR is not increased. The consequences of an accident are unchanged as the design maintains the pressure boundary and has been evaluated and meets appropriate seismic requirements. The consequences of an accident were evaluated by both DAEC (Request for Technical Specification Change RTS-232) and the NRC (Technical Specification Amendment 207). This modification meets the design bases requirements used in those evaluations. As part of the development of the fuel thermal operating limits for the Core Operating Limits Report (COLR) for Cycle 18 operation, all the limiting transient events were evaluated. Because the reactor/turbine heat balance and other plant conditions used as input to these transient analyses accounted for the modification to the MSRs, and the failure modes and effects of the MSR are bounded by current conditions, the consequences of the previously evaluated events are not increased. The Second Stage Reheater Steam Supply Inlet Valves are provided with reliable power and are tested periodically to demonstrate performance. This equipment has been seismically evaluated and meets acceptance standards. Therefore, the probability of occurrence of a malfunction is not increased. The piping and pipe supports associated with the MSR have been evaluated in accordance with design requirements and design limits for power system piping. A loss of instrument air is no more likely than before this modification. The new instrument and control system for the MSR (new Temperature Control System) and changes to the control valves have been designed to be reliable to maximize the efficiency of the refurbished MSRs. The level control in the MSR drain tank, which generates a direct turbine trip signal on high level, was not changed by this modification. Therefore, the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. This activity did not increase the consequences of a malfunction of

equipment important to safety evaluated previously in the SAR. The possibility of an accident of a different type was not created. There are no new design functions or operational characteristics that cause the Turbine, Feedwater and Extraction Steam Systems, including the MSR with second stage reheat, to operate beyond their original design. An evaluation of a MSR tube rupture was performed, based upon a high flow condition in second stage reheat, which determined that the resulting impact on the HP and LP turbines, as well as on feedwater heating was negligible. Thus, no new accident scenario was created. Therefore, the possibility of an accident of a different type than those described in SAR was not introduced. The possibility of a malfunction of equipment of a different type was not created. The margin of safety for the primary containment is not reduced, since this modification did not affect the processing capability of the MSIV-LTS. Because the heat balance was developed assuming the performance of the refurbished MSRs, including second stage reheat, the resulting COLR thermal limits ensure that the margin of safety is not reduced. Thus, this modification did not affect or reduce the margin of safety as defined in the basis for any Technical Specification.

SE 01-013 Core Reload 17/Cycle 18 Activities

Description and Basis of Change

This change involved the incorporation of GE14 fuel into the DAEC core. The transition involves three cycles, such that approximately one third of the fuel was replaced during refueling outage 17. The change was evaluated with respect to shuffling and operation in order to support the activities described in core modification package (CMP-17). The bases for the change are analyses, performed by General Electric and Global Nuclear Fuels – America, reviewed for acceptance by DAEC. This included evaluation of the GE14 design generically, as well as specifically applied to DAEC, and focused on the behavior of a mixed core of GE10, GE12, and GE14 fuel.

Evaluation Summary

The probability of an accident evaluated previously in the SAR is not increased by the shuffle of fuel assemblies or operation of this fuel during Cycle 18. The fuel is designed and licensed by the NRC via GE's topical report which includes, by reference, GE Fuel Bundle Designs. No changes in fuel handling practices or equipment that would affect the bundle drop accident were made with this core modification. Additionally, the Nuclear Fuel System does not perform any safety action for transients, accidents, or special events. The consequences of an accident previously evaluated in the SAR are not increased by the shuffle of fuel assemblies or operation of this fuel during Cycle 18. The core loading pattern has been evaluated

to demonstrate compliance with the licensing basis as described in the SAR. Although the U-235 enrichment has been increased in the bundle design for Cycle 18, that enrichment is bounded by the current analysis and does not increase the consequences of an accident. Although a new fuel type is introduced, DAEC specific analyses have been performed which demonstrate that the consequences of an accident have not been increased. The probability of the occurrence of a malfunction of equipment important to safety as evaluated previously in the SAR was not increased. The GE14, GE12, and GE10 fuel being used in this reload have been demonstrated to meet all acceptance criteria for fuel designs and is manufactured/constructed under an NRC-approved quality assurance program. The probability of a failure of the fuel cladding when operated in accordance with the fuel thermal limits is not increased from that previously evaluated. Also, the ASME Vessel Overpressure Analysis demonstrates that the peak reactor pressure vessel pressure is well within the design allowable limit. Therefore, the probability of a vessel overpressure and subsequent overstressing of the reactor coolant pressure boundary are not increased from that previously evaluated. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. The modification of the loading pattern has been evaluated to ensure that the fuel will perform its intended function during a postulated malfunction of equipment. The results of the transient and accident analysis demonstrate that the fuel cladding integrity is maintained when the thermal limits are met. The Supplemental Reload Licensing Report (SRLR) provides the operating limits that will be observed to ensure fuel cladding integrity is maintained. The possibility of an accident of a different type than any evaluated previously in the SAR was not created. The only events which may be associated directly with fuel loading are the fuel loading error (mislocated bundle) or misoriented (rotated) bundle error. The mislocated bundle is addressed in the GESTAR II. The misoriented bundle has been analyzed and documented in the SRLR. No additional accident type is introduced with this core modification. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The design of GE14 has been compared to GE12 and other fuel types to ensure that the form, fit and function are equivalent to GE12 fuel. The performance of the fuel during all modes of operation has been demonstrated in the SRLR. The reload does not reduce the margin of safety. Since there is no change in the one or two loop Safety Limit Minimum Critical Power Ratio, the margin to safety is maintained as long as the fuel thermal limits are met. The margin of safety to reactivity control is not reduced since the change to Technical Specifications for Standby Liquid Control (increased the required boron concentration to 660 ppm) was approved and implemented prior to startup.

SE 01-014 Temporary Modification To Maintain Reactor Water Cleanup (RWCU) Pump Availability

Description and Basis of Change

A temporary electrical jumper was installed in the logic for the RWCU pumps. The jumper allowed the RWCU pump to start/run, regardless of the position of the RWCU Inlet Inboard Isolation Valve. The system was designed to trip both pumps as a result of the following four conditions: RWCU Inlet Inboard Isolation Valve not full open, RWCU Inlet Outboard Isolation Valve not full open, pump cooling water high temp, or system low flow. The only function that was disabled as a result of this temporary modification was the Inlet Inboard Isolation Valve 'not full open' trip. Since the operator on the Inlet Inboard Isolation Valve was de-termed and left in the 'FULL OPEN' position, it was not possible for the valve to close and subsequently eliminate the suction path to the pumps. The remaining three conditions would still trip either pump. In addition, all conditions that would cause the Inlet Inboard Isolation Valve to close automatically would also cause the Inlet Outboard Isolation Valve to close. The Inlet Outboard Isolation Valve was not affected by this temporary modification, and its automatic functions remained operable. Therefore, since the Inlet Outboard Isolation Valve 'not full open' condition provided an automatic trip to both pumps, this modification had no adverse impact on system operation or protection.

Evaluation Summary

Per the DAEC UFSAR and NSOA, the RWCU System does not initiate any accident. The system capabilities were maintained without detriment to the existing system interactions. Therefore, this modification maintained the design basis of the system and did not increase the probability of occurrence of an accident evaluated previously in the SAR, or increase the consequences of an accident evaluated previously in the SAR. The RWCU System is used as an alternate means of heat removal. This activity maintained the capability of RWCU to aid in the removal of decay heat. This temporary modification did not alter the RWCU System operating parameters. The probability of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. The design capabilities of the RWCU System were not altered. This activity did not detrimentally affect any SSCs that are critical for maintaining the plant in safe shutdown condition, maintaining the integrity of the reactor coolant pressure boundary, or preventing or mitigating the consequences of an accident which could result in potential offsite exposures in excess to those allowed by 10 CFR 100. Therefore, this activity did not increase the consequences of a malfunction of equipment

important to safety evaluated previously in the SAR. No new failure modes were created as a result of this temporary modification. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. No failure modes that could adversely impact the performance of any SSC could be identified. This temporary modification could not lead to any failure mode of a different type than any evaluated previously in the SAR. Therefore, this activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. This activity did not detrimentally affect the ability of the RWCU System as an alternate decay heat removal mechanism. Therefore, this activity did not reduce the margin of safety as defined in the basis for any Technical Specifications.

SE 01-015 **Temporary Modification To Cross-tie Well Water From Turbine Building To Pumphouse**

Description and Basis of Change

A through wall leak had developed in the reducer attached to the well water backflow preventer (located in the auxiliary well water pit). In order to isolate the leak and repair the piping an alternate supply of well water was temporarily installed to supply cooling water to the Circulating Water Pumps and the makeup supply for the Jockey Fire Pump. The well water was cross-tied between the demineralized water hose station connection for the makeup demineralizer truck and a two inch drain/vent connection on the pump house well water supply line. The connection was made using a two inch fire hose between the turbine building railroad door and the pump house. The hose was not routed through areas containing safety related equipment. All loads on the existing well water loop downstream of the well water backflow preventer (located in the auxiliary well water pit) were isolated. This ensured the required cooling water flow was maintained to the power production equipment in the pump house. The loads that were isolated included the Warehouse, Data Acquisition Center, Construction Support Center, Mechanical Fabrication Shop, and the Chlorine and Acid Feed System.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. There was no affect on the power generation equipment related to the Temporary Modification. There are no accidents related to Well Water which have been evaluated in the SAR. The Well Water System is not safety related. The consequences of an accident evaluated previously in the SAR were not increased. This

activity did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. Failure of the installed Temporary Modification would have resulted in the loss of cooling water to the Circulating Water Pumps and the loss of makeup water to the Jockey Fire Pump. Since the Well Water System is non-safety related, it was determined that loss of the Well Water System could not create the possibility of an accident of a different type than any evaluated previously in the SAR. The possibility of a malfunction of equipment important to safety of a different type that any evaluated previously in the SAR was not created. This activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 01-016 Removal Of Condensate Demineralizer Backwash Pressurizing Air Interlock Pressure Switches

Description and Basis of Change

The Condensate Demineralizer A, B, C, D, and E Backwash Pressurizing Air Interlock Pressure Switches and the associated instrument isolation valves were removed. The Backwash Pressurizing Air Interlock pressure switches provided permissives for the Filter Demineralizer A, B, C, D, and E Backwash Pressurizing Air Valves to close on high pressure. Based on the design information, the pressure switches were installed to prevent water being forced into the Service Air Header if the CAMs misaligned and opened the Backwash Pressurizing Air Valves in error. The configuration had the handswitches for the Backwash Pressurizing Air Valves in Auto as an input to the Backwash Programmable Logic Controller, which in turn was connected to the pressure switches and then the solenoid valves for the control valves. With this configuration, the programmable logic controllers prevented the Backwash Pressurizing Air Valves from opening when the bed was in service and the programmable logic controllers failure mode was loss of signal that would fail the Backwash Pressurizing Air Valves closed. The function provided by the pressure switches was no longer required.

Evaluation Summary

All of the design criteria were reviewed with respect to this activity. None of the criteria specified in the DBDs were affected by this activity and there was no safety function for the Backwash Pressurizing Air Interlock Pressure Switches or the Condensate Filter Demineralizer System. None of the accidents previously evaluated in the SAR were affected by the removal of the Backwash Pressurizing Air Interlock Pressure Switches.

This modification affected part of the Condensate Demineralizer System, which is not safety related. There are no credible ways of increasing either the probability of occurrence of an accident or the consequences of any of the accidents evaluated in the SAR by this activity. The pressure switches are non-safety related and in no way could impact the operation of any safety related equipment. There are no credible ways that this activity could increase either the probability of occurrence or the consequences of a malfunction of equipment important to safety as evaluated in the SAR. Removal of the Backwash Pressurizing Air Interlock pressure switches was evaluated for impact on the Condensate Demineralizer System. This modification did not introduce any new failure modes into the filter demineralizer circuitry. Based on this information, the removal of the pressure switches did not create the possibility of an accident of a different type than any previously evaluated, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. There is no reference to the Condensate Demineralizer Backwash Pressurizing Air Interlock pressure switches or the Condensate Demineralizer System in the basis for any Technical Specification. The Technical Requirements Manual does identify surveillance requirements and limits for Reactor Coolant System Chemistry. Removing these pressure switches did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 01-017 Installation Of Instrument Air Spool Piece In Glycol Loop

Description and Basis of Change

A spool piece was installed in the Closed Loop Glycol to/from the Instrument/Service Air Compressors. This spool piece is installed between the existing coolers in a location slotted for the future installation of another cooler. Previously, this spool piece was installed prior to the winter months to allow for bypass of the coolers, and removed during the warmer months. With a change of valve line up and the cross-tie of the loop, the total flow of glycol does not flow through the coolers. This allows better control of the temperature of the glycol during the colder weather.

Evaluation Summary

The probability of occurrence of an accident is not increased as the installation of the spool piece meets the applicable design codes and standards and maintains the system pressure boundary. The consequences of an accident are unchanged as the design maintains the pressure boundary. The installation of the spool piece in the closed glycol loop does not change the non-safety related function of the Instrument/Service

Air Cooling System. This activity did not alter any assumptions previously made in evaluating the radiological consequences of an accident, nor will it play a role in mitigating the radiological consequences of an accident. Since this modification did not change any pressure boundaries or release points, the consequences of an accident evaluated previously were not increased. The spool piece maintains the pressure boundary of the closed loop for glycol used for cooling the Instrument/Service Air Compressors. The spool piece provides a bypass around the coolers as directed by existing operating procedures. Therefore, the possibility of an accident of a different type was not introduced. This modification is not an initiator of any new malfunctions and no new failure modes were introduced. This modification did not introduce the possibility of a change in the probability of occurrence of a malfunction of equipment important to safety as previously evaluated. The consequences of a malfunction of equipment important to safety are unchanged. Since this modification did not change any pressure boundaries or release points, this activity did not increase the consequences of a malfunction of equipment important to safety as previously evaluated. The possibility of an accident of a different type than previously evaluated was not created, and the possibility of a malfunction of equipment of a different type was not introduced. The margin of safety as defined in the basis for any Technical Specification was not reduced since no Technical Specification is associated with the closed loop for glycol used for cooling the Instrument/Service Air Compressors.

SE 01-019 Well Water Supply To Main Plant Intake Coils

Description and Basis of Change

During the winter months the Main Plant Intake Coils are filled with a glycol solution to prevent them from freezing. In the springtime the main plant intake coils are drained of the glycol solution and refilled with fresh water. The cooling loop is then lined up so that the Well Water System will supply the loop with cool fresh make up water, for Reactor Building cooling. The change over from winter heating operations to summer cooling operations usually takes place in the latter part of the month of May, long past the threat of any frost or overnight outside air temperatures (OAT) that might drop below freezing. Due to RFO17 scheduling and resource loading, the decision was made to drain the glycol from the heating loop and convert to the cooling loop in the month of April. There still remained a possibility of frost or low outside air temperatures occurring. This temporary modification overrode the less than 54°F well water isolation.

Evaluation Summary

The Reactor Building Ventilation Plant Air Main Loop Control subsystem is not an accident initiator. Its purpose is to provide personnel comfort in the form of heated air in the winter and cooled air in the summer in the Reactor Building. Modifying the low OAT well water isolation setpoint to allow for continuous well water supply to the main plant intake coils could not have any affect on any accident initiating systems. There are no components in this system whose failure could be the cause of a postulated accident. Therefore, this activity did not increase the probability of an accident as evaluated in the SAR. The Reactor Building Isolation/HVAC System and particularly the Plant Air Main Loop Control subsystem is classified as a support system. This modification prevented possible freezing damage to the main plant intake coils. The purpose of the system and resulting temporary modification were not associated with an accident discussed in SAR and accordingly the modification could not increase the consequences of an accident evaluated in the SAR. A malfunction of any one component in the Plant Air Main Loop Control subsystem and particularly a malfunction in the subsystem ability to control the well water isolation in the main plant intake coils would not increase the probability of a malfunction of equipment important to safety. This activity did not increase the probability of occurrence of equipment malfunction important to safety evaluated previously in the SAR, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. The setpoint for controlling the well water isolation valve and any subsequent malfunction of that device or its setpoint would have no impact on plant safety. This activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. A setpoint change to the Plant Air Main Loop Control System to prevent a low OAT isolation of well water, prevents possible damage to the main plant intake coils from freezing. The possibility of an accident of a different type than any evaluated previously in the SAR was not created. There is no credible failure mechanism of a component in the Plant Air Main Loop Control subsystem that would impact a system important to safety. The possibility of a malfunction of equipment important to safety of a different type than previously identified in the SAR was not increased. The Plant Air Main Loop Control subsystem is not in Technical Specifications and a change to its low temperature isolation would not affect any safety related system. Therefore, the margin of safety as defined in the basis for any Technical Specifications was not decreased.

SE 01-020 Temporary Power to 'B' Side Drywell Cooling Fans

Description and Basis of Change

This temporary modification installed electrical jumpers in the 'B' side drywell cooling fan logic to allow those fans to run at high speed during a planned outage of the normal control power distribution panel. An EMA deenergized the Instrument AC Division 2 Distribution Panel and its associated loads during Refueling Outage 17, which resulted in the loss of control power for the 'B' side drywell cooling fans for approximately three days. In order to provide reasonable working conditions (temperature and humidity) for workers in the drywell during the outage, this temporary modification ensured the 'B' side fans were available.

Evaluation Summary

The Containment Cooling System is not a safety related system nor is it considered to provide any safety function by the NSOA or any plant level DBD. The LOCA analysis assumes an average drywell temperature of 135°F and, therefore, the Containment Cooling System is required during modes 1, 2, and 3 to ensure that the analysis remains valid. Because this temporary modification was installed during modes 4 and 5 when primary containment is not required to be operable, average drywell temperature input into the safety analysis was not applicable. Drywell temperature is only a concern for worker habitability during maintenance activities. The probability of occurrence of an evaluated accident was not increased. Because this temporary modification was installed during a reactor plant outage when the impact on the accident analysis was significantly reduced, the consequences of the DBA were not increased. In addition, this temporary modification placed the Containment Cooling System in the best initial conditions likely (high-speed fan operation) for consideration in the DBA safety analysis even though the system was not required for this mode of operation. The consequences of an accident evaluated previously in the SAR were not increased. The temporary modification was incorporated within the boundaries of the Containment Cooling System and did not impact any other system. The Containment Cooling System is not a safety related system, therefore, no impact on equipment important to safety was possible. This activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. The possibility of an accident of a different type than any evaluated previously in the SAR was not created. The impact and effects of this temporary modification can be adequately predicted because it places the system in a normal lineup, therefore, no new failure modes or conditions are possible. The possibility of a new accident was not created. This activity did not create the possibility of a malfunction of

equipment important to safety of a different type than any evaluated previously in the SAR, and the margin of safety as defined in the basis for any Technical Specification was not reduced.

SE 01-022 Temporary Modifications To Prevent Reactor Water Cleanup (RWCU) Pump Trip During Instrument AC Outage

Description and Basis of Change

During RFO 17, Shutdown Cooling was out of service and RWCU was required to provide alternate decay heat removal during this time. The Instrument AC work packages that were performed during RFO 17 prevented the RWCU pumps from starting/running. Jumpers were installed in the logic for the RWCU pumps to override the pump trip logic for RWCU Pump High Cooling Water Temperature and System Low Flow. These trip functions are for the protection of the pumps. The remaining two conditions (RWCU Inlet Inboard Isolation Valve not full open, and RWCU Inlet Outboard Isolation Valve not full open) would still trip either pump.

Evaluation Summary

Per the DAEC UFSAR and NSOA, the RWCU system does not initiate any accident. The system capabilities were maintained without detriment to the system interactions. Therefore, the temporary modifications maintained the design basis of the system and did not increase the probability of occurrence of an accident evaluated previously in the SAR. This activity did not increase the consequences of an accident evaluated previously in the SAR. The RWCU System is already identified per DAEC Technical Specifications Bases as an alternate means of heat removal during Residual Heat Removal Shutdown Cooling System Out Of Service windows. An Integrated Plant Operating Instruction provides the administrative instructions for the system under these conditions. These Temporary Modifications only maintain the capability of RWCU to aid in the removal of decay heat. The temporary modifications do not alter the RWCU system operating parameters. The probability of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. The design capabilities of the RWCU System were not altered. This activity did not detrimentally affect any SSCs that are critical for maintaining the plant in safe shutdown condition, maintaining the integrity of the reactor coolant pressure boundary, or preventing or mitigating the consequences of an accident which could result in potential offsite exposures in excess to those allowed by 10CFR100. Therefore, this activity did not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. No new failure

modes were created. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. These temporary modifications would not lead to any failure mode of a different type than any evaluated previously in the SAR. These activities did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. These temporary modifications did not detrimentally affect the ability of the RWCU System as an alternate decay heat removal mechanism as required by DAEC Technical Specifications. Therefore, these activities did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 01-023 **Torus/Drywell Vacuum Breaker Test Solenoid Valve Missing Mounting Bolt**

Description and Basis of Change

One of the four mounting bolts for a Torus-Drywell Vacuum Breaker Test Solenoid Valve was found to be missing. A technical evaluation was performed to evaluate the potential stress in the remaining 3 bolts during worst case conditions and was found to be well within acceptable limits. To install a bolt would have required significant equipment disassembly. Therefore, it was concluded to USE-AS-IS. The missing bolt did not affect the ability of the mounting hardware to adequately secure the solenoid valve, or affect the function of the solenoid valve itself. No other portion of the design, function or method of performing the function of any structure, system or component was affected.

Evaluation Summary

The testing function supplies assurance that the vacuum breakers will perform their function following a LOCA in the drywell. The reduction in bolting did not reduce the capabilities of the solenoid valve to perform testing or the control valve to relieve pressure. A failure of the solenoid valve mounting would not increase the probability of any accident identified in the SAR. There was no reduction in capability of either the solenoid valve or the control valve. The vacuum breaker still functioned as designed. The consequences of an accident, the probability of occurrence of a malfunction of equipment important to safety, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR were not increased. The ability of the solenoid valve to fail in a manner that would create an accident of a different type than was previously evaluated in the UFSAR was not possible. An evaluation of the new mounting arrangement showed that the solenoid would not fail during normal or accident-loading conditions. Therefore,

this modification could not increase the potential for an event that would adversely affect one or more of the radioactive material barriers during the course of normal operation. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. This condition did not change or impact the NSOA in any way or require any change to procedures or training. The margin of safety as defined in the basis for any Technical Specification was not reduced.

Section B - Procedure/Miscellaneous Changes

This section contains brief descriptions of Procedure/Miscellaneous changes completed during the period March 1, 2000 through October 31, 2001, and summaries of the safety evaluations for those changes, pursuant to the requirements of 10 CFR Section 50.59(d). All changes were reviewed against 10 CFR 50.59 by the Duane Arnold Energy Center (DAEC) Operations Committee. None of the changes involved an unreviewed safety question.

SE 99-042 (Revision 1) **Change In Fire Watch Requirements For The Cable Spreading Room Carbon Dioxide Suppression System (CARDOX)**

Description and Basis of Change

This change modified the UFSAR and Fire Plan to change the fire watch requirement for CARDOX impairments from continuous to hourly and removed the statement regarding fire extinguishing equipment for impairment fire watches. This change made the fire watch requirements for the CARDOX consistent with other Fire Plan required suppression systems and removed potential confusion regarding fire extinguishing equipment to be used by impairment fire watches.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. Fire is not an entry condition, basis or an assumption for any accident previously evaluated in the UFSAR and NSOA. The changes did not increase the probability of any of the following events occurring: a fire, inadvertent actuation of a fire suppression system or loss of plant equipment credited in the safe shutdown analysis. This activity did not increase the consequences of an accident evaluated previously in the SAR. The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not changed by this activity and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. Safe shutdown can be achieved independent of fire watches and fire suppression system actuation. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not increased. This change did not reduce the margin of safety as defined in the basis for any Technical Specification.

SE 00-007 Technical Requirements Manual (TRM) 24 VDC Revision

Description and Basis of Change

This revision to the 24 VDC section of the TRM allows for water addition to the battery cells and sufficient time (8 weeks) to allow complete mixing of water and electrolyte. During the time that the electrolyte is mixing, battery-charging current is used in the place of specific gravity to determine the overall state of the battery. The addition of water and using battery charging current to determine the state of the battery are discussed in IEEE Standard 450-1980.

Evaluation Summary

The function of the 24 VDC System is to provide 24 VDC Power to the system loads. Each system supplies 24 VDC power to Source and Intermediate range core activity monitors and liquid process radiation monitors. If the 24 VDC bus were to lose power, the loads would fail in the tripped condition. This change did not increase the probability of occurrence of an accident evaluated previously in the SAR, and the consequences of an accident evaluated previously in the SAR were not increased. This change to the TRM allows for sufficient time for the addition of water and existing electrolyte to diffuse into a homogeneous mixture. Using charging current instead of electrolyte samples when stratification exists (stratification exists after the addition of water) is recommended in IEEE Standard 450-1980. The 24 VDC System fails safe. If a 24 VDC battery would become inoperable, a Group 3 Isolation would occur fulfilling the trip function of all 24 VDC loads. The addition of water to the 24 VDC batteries is considered routine maintenance as water level falls below the high level mark. This change did not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR, and the consequences of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. IEEE Std 450-1980 recommends the use of charging current instead of specific gravity to determine the state of the battery during the first 6-8 weeks after the addition of water to a battery cell. The consequences of a malfunction of the batteries remain unchanged. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR, and the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR was not created. The margin of safety as defined in the basis for any Technical Specification was not reduced. Adding water to the batteries does not reduce the margin of safety.

SE 00-011 Fire Plan Volume 1 Program Revision

Description and Basis of Change

This change modified the Fire Plan-Volume 1, Program, Section 12.3, Bases for 12.1 and 12.2, General, Item #2, Surveillance last sentence from "Fire Protection Systems shall not be considered impaired during testing if the system can be restored to an operable condition within one hour." to "Fire Protection Systems or equipment shall not be considered impaired during testing of Fire Protection Systems or equipment except for testing which requires a tagout that impairs a Fire Protection System or equipment."

This activity also revised the Fire Plan-Volume 1, Program Section 11.4 second sentence from "..Equipment out of service for more than 30 days and not addressed by plant Technical Specifications should be reviewed for compensatory measures such as interim operator manual actions or firewatchers.." to "..Equipment out of service for more than 30 days and not addressed by plant Technical Specifications or Technical Requirements Manual shall be reviewed for compensatory measures such as interim operator manual actions or firewatchers..".

The basis for the change is DAEC's desire to make the bases section less confusing, provide a valid screen for when systems are considered impaired during testing and eliminate redundant out of service tracking requirements.

Evaluation Summary

This activity did not increase the probability of occurrence of an accident evaluated previously in the SAR. Fire is not an entry condition, basis or an assumption for any accident previously evaluated in the UFSAR and the NSOA. The changes did not affect the ability to achieve safe shutdown following a fire. This activity did not increase the consequences of an accident evaluated previously in the SAR and they did not affect fission product barriers. The probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR was not changed by this activity. The equipment involved is not safety related and the changes did not increase the likelihood of equipment malfunction. The consequences of a malfunction of equipment important to safety evaluated previously in the SAR was not increased. The changes did not affect the ability of any safety related equipment to perform its function. This activity did not create the possibility of an accident of a different type than any evaluated previously in the SAR. The equipment involved is provided to protect against design basis fires evaluated in the DAEC Fire Hazards

Analysis, not against accidents evaluated in the SAR, and the changes do not impact the plant's ability to achieve safe shutdown conditions in the event of a fire, or create any new or different accidents. The possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR is not increased. Because none of the fire protection test procedures requires greater than one hour to restore the Fire Protection Systems, no test procedures fail the current bases screen. Adding the tagout screen increases the Fire Protection Systems that are considered impaired during testing from a bases standpoint and is therefore a conservative change. There is no reduction in Fire Protection Systems or equipment that would be considered impaired during testing as a result of the change. The Technical Requirements Manual Action statements meets the intent of Fire Plan, Volume 1 to maintain credited safe shutdown systems operable. This change will not reduce the margin of safety as defined in the basis for any Technical Specification as Fire Protection Systems do not form the basis for any Technical Specification safety margins.

SE 00-025 Low Pressure Emergency Core Cooling Requirements

Description and Basis of Change

Core Modification Package, CMP -16, was developed for Cycle 17. As part of this package, a Loss Of Coolant Accident (LOCA) analysis was performed by General Electric document NEDC-32915P, "Duane Arnold Energy Center GE 12 Fuel Upgrade Project". The LOCA analysis concerning adequate core cooling concludes that, "The DAEC design satisfies long-term cooling by either: 1) maintaining core submergence; or, 2) by maintaining 2/3 core coverage and having one Core Spray (sub)system available." Whereas previous acceptance of long-term cooling has been defined to be either: 1) maintaining 2/3 core coverage; or, 2) by spraying the core with Core Spray, this safety evaluation provides the 10 CFR 50.59 basis for allowing changes to the UFSAR, design basis documents, etc. concerning the new definition of acceptable long-term core cooling.

Evaluation Summary

The probability of occurrence of an accident previously evaluated in the SAR was not increased because the shared responsibility for the Low Pressure Coolant Injection (LPCI) System and Core Spray is not an accident initiator per the SAR. The consequences of an accident previously evaluated in the SAR were not increased because LPCI and Core Spray continue to provide adequate core cooling for all design basis and licensing events. The SAR recognizes the shared responsibility of

LPCI and Core Spray. Thus, the low-pressure ECCS function remains available to fulfill any required safety actions to mitigate the consequences of an accident evaluated previously in the SAR. The probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR was not increased since Residual Heat Removal (RHR) and Core Spray System performance will not be affected. Both systems will function as designed and licensed. Thus, there is no effect on the LPCI System or Core Spray System with respect to potentially damaging RHR or Core Spray equipment. The consequences of a malfunction of equipment important to safety previously evaluated in the SAR were not increased. No new failure modes were introduced. The possibility for an accident of a different type than any evaluated previously in the SAR was not created because there are no new failure modes introduced. The SAR recognizes the shared responsibility of LPCI and Core Spray. This activity did not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR since there are no new failure modes introduced which are not part of the existing SAR. The RHR and Core Spray System performance is not affected and both systems will function as designed and licensed. The margin of safety was not reduced based on a review of the Technical Specifications, Technical Specification Bases, UFSAR and NSOA, since there is no margin of safety defined which could be affected because LPCI and Core Spray continue to provide adequate core cooling for all design basis and licensing events. The SAR recognizes the shared responsibility of LPCI and Core Spray.

SE 00-030 Radwaste Processing And System Operation UFSAR Change

Description and Basis of Change

Changes to the UFSAR were required to keep the UFSAR up to date with current practices relative to Radwaste processing and Radwaste System operation. These changes added a description to the UFSAR for alternate processing for pretreating low purity waste in spent resin tanks. Also, the statement in the UFSAR relating to the frequency of the radwaste demineralizer resin replacement being about once per month was deleted. Actual frequency of resin replacement has decreased to about once per six months; however, changing plant conditions can cause this frequency to vary.

Evaluation Summary

These changes do not affect the inputs into any accident analysis performed for the DAEC. Therefore, this activity did not increase the probability of occurrence or the consequences of any accident evaluated

previously in the SAR. The changes do not affect any equipment important to safety and do not increase the probability of a malfunction of any equipment described in the SAR. The changes do not affect any regulatory commitments regarding malfunction of equipment, and do not result in any increased radiological exposure to plant personnel or the public. Therefore, these changes do not increase the consequences of a malfunction of any equipment important to safety evaluated previously in the SAR. The new processing flow paths utilize existing piping flow paths already included in the UFSAR. This activity did not create the possibility of an accident of a different type or malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The bases for Technical Specifications associated with the Radwaste System were not affected by these changes. The margin of safety is defined for this system by bounding criteria, which are contained in the SAR and was not affected by these changes. This activity did not reduce the margin of safety as defined in the basis for any Technical Specification.

Section C – Tests and Experiments

This section contains a brief description of Tests completed during the period beginning March 1, 2000 and ending October 31, 2001. The Tests were reviewed against 10 CFR 50.59 by the DAEC Operations Committee. No unreviewed safety question was identified. No experiments were conducted during this time period.

SE 01-009 Special Test Procedure (SpTP) 204 – Electrohydraulic Control (EHC) System Pressure Regulator Dynamic Tuning

Description and Basis of Change

This test verified the tuning of the EHC parameters and demonstrated the EHC System response to pressure transients and regulator failure was acceptable following the changes implemented during RFO 17. The information obtained from performing SpTP 204 verified instrument settings and proved operability. This testing was required as a result of the Power Uprate (PUP) Project Task Report (TR) 1005 "Startup Test Specifications", and the Turbine Control System modification. This Special Test coordinated all activities, such that they would not create new types of events and ensured that additional data was recorded above that normally documented during routine operation. This test used permanently installed plant monitoring equipment/instrumentation as well as "non intrusive" recording/data gathering techniques. The turbine generator Original Equipment Manufacturer (OEM), General Electric (GE) issued a Service Information Letter (SIL) 589, Revision 1 in February 1996 for the Main Turbine EHC System. This SIL contained EHC tuning and adjustments essential for proper operation and transient response. PUP Project TR 1005 was issued to generate Startup Test Specifications for Nuclear Steam Supply System and Balance of Plant System tests necessary for the confirmation of acceptable plant performance for operation at uprated power levels to 1912 MWth. The TR section for Pressure Regulator recommends confirmation of the dynamic tuning parameters for the system. These tuning parameters are stated in SIL 589, Revision 1. SpTP 204 demonstrated proper transient operation of the Main Turbine Pressure Regulation System as referenced in the SIL.

Evaluation Summary

This SpTP demonstrated proper transient operation of the Main Turbine Pressure Regulation System and did not relate to the margin of safety as defined in the basis for Technical Specifications, NSOA, and UFSAR. This test did not increase the probability or consequences of any accident because no systems designed to mitigate any accident were affected and the EHC testing that was performed did not affect any system that initiates

any evaluated accident. This test did not increase the probability or the consequences of a malfunction of equipment important to safety because no equipment important to safety was adjusted or tested under this procedure. This test did not create the possibility of a different type of accident or malfunction because the Turbine Control System cannot create a different type of accident than those already evaluated and this system is not taken credit for in the mitigation of any accident or transient.

SE 01-012 (Revision 1) SpTP 200 Revision 1 - Turbine Cycle Performance Test

Description and Basis of Change

The reason for performing this Turbine Steam Cycle Performance Test was based on an Electrical Power Research Institute (EPRI) Thermal Performance Peer Assessment conducted at the DAEC in June 1999. This assessment recommended that a "limited" performance test be conducted. This recommendation was based on our need to improve the plant heat balance model in order to verify current plant performance level. In addition, the results of this test may be used to verify the steam turbine cycle enhancement for power uprate. This SpTP provides a means to:

- Accurately measure operation of the DAEC at 1658 MWth following the PUP modifications made during RFO 17 for direct comparison to its operation at 1658 MWth following RFO 16 (prior to PUP modifications).
- Perform acceptance testing of the newly refurbished Moisture Separator Reheaters (MSR(s)) to provide a legally defendable means of determining whether criteria set out in the agreement with the MSR vendor have been adequately met.
- Provide input necessary to create an accurate computer model of the thermal cycle to allow thermodynamic analysis of the plant during Cycle 18.

This Turbine Steam Cycle Performance Test was conducted within 120 days following the completion of RFO 17 in order to verify the performance of installed MSR equipment. This performance test is planned to be repeated following reactor power increases to 1790 MWth and 1912 MWth.

Installation and removal of test instrumentation has no process control impact, but could affect plant indications. The instrument tubing and tees allow the highly accurate test equipment to be installed and removed with no expected impact on other systems. This process is performed using

normal instrument calibration practices. Following is a list of the measurements taken:

Condensate Flow
Condensate Reject Flow
Feedwater Flow
MSR Reheater (First Stage Heating Steam) Flow
MSR Reheater (Second Stage Heating Steam) Flow
MSR Reheater (First Stage Scavenging Steam) Flow
MSR Reheater (Second Stage Scavenging Steam) Flow
Steam Jet Air Ejector (SJAE) Steam Flow
Control Rod Drive Flow
Feedwater Heaters 5A and 5B Drain Discharge Flow
Reactor Vessel Pressure
Main Steam Pressures
High Pressure (HP) Turbine First Stage Pressure
MSR Heating Steam Pressure
HP Turbine Fourth Stage Extraction Steam Pressure
MSR Pressure Points
Low Pressure (LP) Turbine Pressures
Feedwater Heater Pressure Points
LP Turbine Extraction Pressure Points
Condenser Shell Pressures
Turbine Exhaust Basket Tip Pressure Line Instruments
Temperature Indications
Generator Electrical Metering Test Equipment

There will be more than one test run, and more than one plant line-up for the test. These will all be performed in accordance with the DAEC Operating procedures and this Special Test. All the tests will be run at a Nominal 100% Reactor Power operation (1658 MWth). The data collection times will be planned for at least one hour. The normal plant operating lineup will be utilized for three SpTP conditions and a condenser isolation line-up will be used for the official Test runs. The major line-up changes include isolation of Condensate Reject and Make-up flows for the condenser. Cycle monitoring of the Control Rod Drive (CRD) System and the Condensate Storage Tank (CST) volume is currently the method used for this portion of the heat balance. Other isolations will include valves associated with extra steam/heat loads to the Condenser. For example, the isolation of Main Steam Line Drains is permitted for reasonable amounts of time. To adjust Condenser inlet conditions, the number of Cooling Tower Fans operating will also be controlled during the test. Test instruments or measurements taken during the test do not alter the design, function, or method of performing the function of the subject Structure, System or Component (SCC). This testing is performed per DAEC

procedures and the general guidelines of ASME for steam turbines and for MSR testing. These tests require the installed test equipment to perform similar to the station instruments design and their output to be checked against this same station instrumentation. During instrument installation, normal plant indications may be temporarily unavailable for control room indication.

Evaluation Summary

This activity does not increase the probability of occurrence of an accident evaluated previously in the SAR. The NSOA review identified areas to evaluate such as Turbine Trip/Load Reject with, and without, Bypass and Reactor Pressure Control. The results showed that the probability of occurrence of an accident, transient, or special event previously evaluated in the SAR would not be increased by this activity. The Test uses approved procedures and practices to complete the Test steps. This does not affect the plant operation, or increase the likelihood of a plant trip. This activity does not increase the consequences of an accident evaluated previously in the SAR. The consequences of an accident are unchanged since the test connections and valve line-ups maintain the pressure boundary and meet the appropriate seismic requirements. This activity does not increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAR. The valve line-ups, including Condenser cycle isolations and cooling tower fan operations, are normal operating practices. This activity does not increase the consequences of a malfunction of equipment important to safety evaluated previously in the SAR. The possibility of an accident of a different type than any evaluated previously in the SAR is not created. With the exception of the nitrogen purge to the MSR pressure sensing lines, the Test configuration has only a passive function, and the modified Test and line-up configuration has been designed to applicable standards. The quantity of nitrogen introduced in the purge is of negligible quantity and will not affect operation. This activity does not create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAR. The possibility of a malfunction of equipment of a different type is not created as the Test configuration has only a passive function and no safety function. The test line-ups have no affect on safety functions. This activity does not reduce the margin of safety as defined in the basis for any Technical Specification. The Test configurations or valve line-ups have no impact on safety or safety margin.

SE 01-021 SpTP 201 - Cycle 18 Power Ascension Test To 1658 MWth

Description and Basis of Change

This special test confirmed acceptable plant performance for operation at power levels up to 1658 MWth, following plant modifications in RFO17 installed to support uprated power levels to 1912 MWth. This test provided baseline testing at or below existing rated full power conditions (i.e., 1658 MWth) to be used to predict the outcome of similar testing at uprated power levels of 1659 MWth to 1912 MWth. This testing was very similar to that performed as part of the original plant startup test program described in the UFSAR. Because no plant modifications were made as part of this testing and no plant equipment is being operated outside its design envelope, this testing was consistent with the original plant design and licensing basis.

Evaluation Summary

In general, this activity involved routine testing and surveillance activities that posed no additional probability of occurrence or consequences beyond that previously assumed. In the case of the special testing requirements, such as the Feedwater Control, Turbine Cycle Performance and Pressure Regulator testing, strict controls were applied to these activities, in particular the installation and removal of any special data gathering instrumentation. In addition, cautions and limits were set to stop the test should unanticipated results be encountered. This ensured that an unanticipated transient event should not occur. This was also ensured by performing the tests that perturb plant parameters, independently, in a step-wise fashion as reactor power is increased and perturbing the parameters, such as level or pressure, in small increments, in increasing order. It was highly unlikely that an unanticipated, step change in response would occur from the trend established at lower power levels/previous test conditions. Thus, the probability or consequences of a previously analyzed event, or new event, were not created. No plant equipment was operated in an abnormal manner, outside its design operating ranges or control settings. No new jumpers, lifted leads or unique system/valve lineups were used in this testing. Thus, the probability or consequences of a malfunction of equipment, or new malfunction, were not created. All Technical Specification limits were maintained prior to performing any of the test sequences, i.e., the key input parameters and assumptions in the UFSAR analyses were maintained and the consequences of any anticipated event were bounded by the safety analysis (e.g., Core Operating Limits Report). Thus, the margin of safety was maintained.

Section D - Fire Plan Changes

The information contained in this section identifies, briefly describes and provides assurance that changes made to the DAEC Fire Plan during the period beginning March 1, 2000 and ending October 31, 2001 did not alter our commitment to the NRC guidelines contained in "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance."

Revision 37

The section which required tracking of availability of Appendix R credited equipment allowed an exclusion for equipment, which is also included in Technical Specifications, on the bases that entering a Technical Specification LCO and a Fire Plan Administrative LCO would not add benefit. Revision 37 added an exclusion for equipment that is included in the Technical Requirements Manual on the same bases.

In the section that requires tracking of availability of Appendix R credited equipment, the requirement to evaluate compensatory measures was stated as "should". Revision 37 changed this requirement to "shall".

Various editorial changes were also made.

Revision 38

ECP-1619 replaced fire detection panel XL3, removed panel 1C454, replaced ionization detectors with photo-electric detectors, added fire detection in the battery corridor and changed detector identification numbers. This revision to the Fire Plan incorporated the changes made by ECP-1619.

Revision 39

The Fire Plan format was revised to match the Technical Specifications format.

The time allowed to achieve Mode 3 was revised to be consistent with Technical Specification 3.0.3.

The operability requirements and required actions for Fire System, fire pumps and various Suppression Systems were revised to be consistent with the impairments.

Added a specific listing of Appendix R equipment, which is not included in Technical Specifications or the Technical Requirements Manual.

Clarified applicability to specific reference to Technical Specification Modes.

Removed Operability requirements for River Water Pumps which are controlled by Technical Specifications.

Section E - Commitment Changes

The information contained in this section identifies and briefly describes commitment changes that were made during the period beginning March 1, 2000 and ending October 31, 2001. The changes described are being reported per the Nuclear Energy Institute's "Guidelines for Managing NRC Commitment Changes", dated July 1999.

AR 19455

In March, 1998, DAEC removed the Reactor Manual Control System (RMCS) from service to conduct maintenance while on line. This evolution was of concern to the NRC. As a result, a special inspection was conducted concerning the removal of RMCS while on line. The resulting Inspection Report noted that Region III staff was concerned with the practice of removing RMCS from service while at power and that the Region had forwarded this concern to Headquarters. As a result of the inspection, a verbal commitment was made to the Region that we would not voluntarily remove RMCS from service while at power. An Operating Instruction was revised to add a Precaution and Limitation which stated:

The Reactor Manual Control System will not be voluntarily removed from service during startups, shutdowns, or power operation. Failure of RMCS with control rods withdrawn shall be promptly repaired.

This commitment has since been revised. In response to the Regional request to Headquarters, a memorandum dated November 12, 1998 was issued from Headquarters to the Region. In summary the memo concluded that a generic regulatory position on the period of time under what circumstances it is acceptable to remove rod control from service already existed in the form of the maintenance rule. As a result, DAEC enhanced RMCS monitoring under the DAEC Maintenance Rule Program in May 1999 to include targets for availability and reliability. Therefore, the commitment was revised to the following:

RMCS will only be removed from service during power operations to repair RMCS failures that potentially restrict/impact plant operations with prior Plant Manager Approval.

AR 12626

As stated in Inspection Report 91-009, for closure of Licensee Event Reports 90-008 and 90-011, corrective actions taken included development of a risk evaluation data (RED) sheet. The RED sheet provided a systematic checklist for reviewing maintenance, construction, and testing activities in order to

heighten awareness of the SCRAM and Engineered Safety Feature actuation risks associated with work activities. The RED Sheet is an administrative planning checklist, which is duplicative of controls in an administrative procedure. Therefore, use of the RED Sheet is no longer required.