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November 15, 2004

NL-04-2207

Docket Nos.: 50-424
50-425

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant
Report of Facility Changes, Tests & Experiments

Ladies and Gentlemen:

In accordance with 10 CFR 50.59 (d) (2), Southern Nuclear Operating Company (SNC) hereby submits the Vogtle Electric Generating Plant (VEGP) Report of Facility Changes, Tests and Experiments. This report reflects changes from November 17, 2002 through May 17, 2004, which is consistent with the current Revision 12 of the VEGP Updated Final Safety Analysis Report.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Don E. Grissette

DEG/dwm/sdl

Enclosures: 10 CFR 50.59 Report of Facility Changes, Tests & Experiments
November 17, 2002 thru May 17, 2004

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. W. F. Kitchens, General Manager – Plant Vogtle
RType: CVC7000

U. S. Nuclear Regulatory Commission
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VOGTLE ELECTRIC GENERATING PLANT UNITS 1 & 2
10 CFR 50.59 REPORT OF FACILITY CHANGES, TESTS & EXPERIMENTS
NOVEMBER 17, 2002 THRU MAY 17, 2004

REPORT OF FACILITY CHANGES

Note: There are no Tests or Experiments for the period involved.

DCP 97-V1N0037
DCP 97-V2N0065
DCP 98-VAN0003
DCP 98-V2N0033
DCP 98-V1N0035/98-V2N0036
DCP 98-VAN0064
DCP 99-VAN0014
DCP 99-V1N0058
DCP 00-V1N0035
DCP 00-V2N0059
DCP 01-V1N0032/01-V2N0033

MDC 00-VAM019
MDC 00-VAM033
MDC 00-V2M054
MDC 01-VAM040
MDC 01-V1M043
MDC 01-VAM056
MDC 02-V2M026
MDC 02-VAM074
MDC 03-V1M061
MDC 03-V2M062

DCP: 97-V1N0037
DCP Title: Improve MSIV Closure Time Reliability and Maintainability

DESCRIPTION: The vendor for the Main Steam Isolation Valves (MSIVs), Edwards Valves, recommended several enhancements to actuators on the MSIVs (tag numbers 1-HV-3006A, 1-HV-3006B, 1-HV-3016A, 1-HV-3016B, 1-HV-3026A, 1-HV-3026B, 1-HV-3036A and 1-HV-3036B). The modifications made were: (1) added high pressure coupling fittings to the connecting points for the hydraulic pressure switch and the thermal hydraulic safety relief valve to improve ease of maintenance, (2) installed a double setscrew arrangement on the flow control valve to ensure consistency between as-found valve closing times and as-left closing times by preventing movement of the flow control valve due to vibration, and (3) installed QDC-style bayonet connectors on several cable connections to MSIV junction boxes to allow quick cable determination/retermination capability during routine maintenance activities. The flow control valve performs a safety-related function to ensure adequate hydraulic fluid flow rate to close the MSIV in the timeframe described in the FSAR. The replacement setscrew affects the performance of the flow control valves and is a safety-related item.

EVALUATION SUMMARY: The safety-related function of the MSIVs is to close; however, the portion of the actuators' hydraulic system which is affected by this change does not perform a safety-related function since the valves will close upon a manual or automatic signal even with a failure of the new fittings. Addition of a replacement setscrew to the flow control valve in the actuator enhanced the ability of the flow control valve to perform properly and ensures the proper closing time of the MSIV is met. The new setscrew is a safety-related item that is qualified for its function in safety-related service. The addition of bayonet-style cable connectors to various cables connected to the MSIVs enhanced the ability to perform maintenance activities, but did not change the electrical or control scheme of the MSIVs in any way. The design change did not increase the probability of an occurrence of an accident previously evaluated in the FSAR. This design change did not change the function of the MSIVs, or the facility, as described or implied in the FSAR, TS Bases or the TRM. No FSAR text changes are associated with this design change. The TRM and the Technical Specification Bases were not impacted by this design change. There were no procedures described in the FSAR that should change as a result of these modifications. These changes to the MSIVs enhanced maintenance/calibration activities and do not represent a test or an experiment. The changes described in this DCP did not change the safety limit settings on any of the MSIVs; therefore, there was no change to the margin of safety as defined in the Technical Specifications, TRM or bases as incorporated into the operating license.

DCP: 97-V2N0065
DCP Title: CONTAINMENT MINI-PURGE FAN REPLACEMENT

Description: The existing belt-driven containment mini-purge exhaust fan 2-1506-B7-002 was replaced with a direct-drive fan arrangement. This change was made to eliminate an opening in the fan housing that allows contaminated air to escape into the equipment building. The new fan was mounted on the existing concrete pedestal and continues to be powered from a non-1E power source. In addition to the fan replacement, the mini-purge fan discharge isolation damper 2HV-2632B was changed from "normally closed - fail close" to "normally open - fail open." This damper required local manual operation each time the mini-purge system is operated. The damper was previously changed to "normally closed - fail closed" by ABN 32652 to minimize potential leakage of contaminated air through the fan belt opening. The change returned the damper to its original configuration prior to ABN 32652. Since leakage through the belt opening is eliminated with the direct-drive fan arrangement, the isolation function of the damper is no longer required and the damper can remain in the normally open position. The equipment modified by this design change is non-safety related and does not support the operation of any safety related equipment. The minipurge fan replacement and isolation damper modification has no affect on the normal design function of this system or the safety design function of the associated containment isolation valves. The containment mini-purge system is designed to operate only during normal plant operation to maintain airborne radioactivity within acceptable levels and control containment pressure buildup.

EVALUATION SUMMARY: The change from a belt-driven fan to a direct-driven fan does affect the description of the mini-purge exhaust system or any drawings referenced in the FSAR. However, changing the mini-purge discharge isolation damper from "normally closed – fail closed" (NC/FC) to "normally open – fail open" (NO/FO) affects P&ID 2X4DB213-1 which has the Unit 1 equivalent drawing referenced in FSAR section 9.4.6. The containment mini-purge system is non-safety related and is not required to support any safety related systems. The change has no affect on the containment isolation functions described in Technical Specification 3.3.6 and 3.6.3. The design function and operating requirements of the containment minipurge exhaust system was not changed as a result of this DCP. The mini-purge exhaust fan has the same performance characteristics (flow, pressure, etc.) as the existing fan. Although plant procedures are affected by the change in discharge damper normal configuration from NC/FC to NO/FO, there is no change to procedures as described in the FSAR, TS Bases or TRM. No test or experiment is involved with this change.

The containment mini-purge system is designed to operate only during normal plant operation. Its primary function is to maintain airborne radioactivity below the level required for personnel occupancy and control containment pressure buildup during normal reactor power operation. The changes did not alter the design function of the containment purge system or any associated safety related systems. During accident conditions, the containment purge system (normal purge & mini-purge) is automatically isolated from the containment atmosphere by safety-related isolation valves. The mini-purge fan replacement and discharge damper configuration change has no affect on the safety related containment isolation function. Based on a review of the FSAR, including sections 6.2.4, 9.4.6 and Chapter 15, the proposed change does not increase the probability of an occurrence of an accident previously evaluated in the FSAR. The containment mini-purge system is assumed to be isolated at the onset of a LOCA event. For LOCA dose analysis purposes, FSAR Table 15.6.5-4 shows that the mini-purge

system operates at the design flow rate of 5000 ft3/min for 85 seconds from the time of accident initiation. The replacement of the mini-purge exhaust fan and the discharge damper configuration change had no effect on the accident analysis assumptions nor did it create the potential of any accidents of a different type than previously evaluated. The new mini-purge fan has the same performance characteristics as the existing fan and the control features remain unchanged.

DCP: 98-VAN0003
DCP TITLE: Circulating Water Conductivity Instrumentation

DESCRIPTION: Circulating Water sampling was not performed at the TPSS (Turbine Plant Sampling System) lab for some time, but rather was taking place near the Circulating Water basin. Some instruments associated with Circulating Water sampling previously located on the Analyzer Panels (1/2-1311-P5-AP) and Recorder Panels (1/2-1311-P5-RP) are no longer located on these panels. These are instruments 1/2-CE-9450 and 1/2-CITS-9450 and associated tubing and wiring. This DCP retired-in-place or physically removed piping, tubing, valves, instruments, and sample pumps which were no longer needed to support sampling in the TPSS lab. As part of this change, certain valves that had been depicted as normally open were changed to normally closed. Drawings were updated to show any piping, equipment, pumps and instruments that were physically removed or retired-in-place. Breakers and cables associated with the Circulating Water sample pumps and conductivity instrumentation were spared. Capability was provided to obtain a grab sample on Level "A" of the Turbine Building in each unit. Affected piping is non-safety related, project class 626. Affected instruments are project class 62J. All internal panel wiring/re-wiring and any cables modified by this design change are non-safety related, project class 62E. Threaded pipe caps were used in lieu of socket welded pipe caps on the cut and capped retired-in-place piping.

EVALUATION SUMMARY: FSAR Table 9.3.2-3 was revised to show that line 1/2-1311-508-1" no longer provides sampling capability and also that specific conductivity is no longer recorded from this particular sample point. FSAR Table 9.3.2-4 was modified to reflect the new grab sample created for each unit by this design change. Upon review of the Technical Specifications Bases and Technical Requirement Manual, it was concluded that these documents were not affected by this design change. This design change removed and retired-in-place piping, instruments, pumps and valves which were no longer needed for Circulating Water sampling. Water sampling of Circulating Water will continue, but sampling will normally take place near the Circulating Water basin. There were no procedures described or implied in the FSAR, the TS Bases or the TRM that required revision as a result of this change. The TPSS is not relied on to prevent or mitigate an accident as defined in the FSAR. The physical changes maintained the design, material and construction standards applicable to the TPSSS. A failure of any component in the TPSS does not lead to the failure of any safety-related equipment or result in an initiation of any accident evaluated in the FSAR. Therefore, the proposed activity does not increase the probability of an occurrence of an accident previously evaluated in the FSAR.

DCP: **98-V2N0033**
DCP TITLE: **Turbine Monitoring System**

DESCRIPTION: The original General Electric (GE) supplied main turbine eccentricity, shell expansion, rotor expansion; differential expansion plus the steam generator feed pump turbine eccentricity loops was replaced with functionally identical Bentley Nevada (BN) hardware (cards, sensors). An existing BN cabinet on the turbine-generator operating floor was used in this design as well as a cabinet for the steam generator feed pump turbine (SGFPT) that is located on elevation 220' of the turbine building.

EVALUATION SUMMARY: New BN sensors replaced the GE sensors that are installed in the process area. Each sensor loop circuit was routed through a junction box to the Bentley Nevada cabinet. Originally the loops were routed directly from the junction box to the advanced turbine supervisory instrumentation (ATSI) cabinet. The loop circuits were routed from the EN cabinet back to the junction box and on to the ATSI cabinet and the Integrated Plant Computer (IPC). No new cabling was installed between junction boxes in the turbine building and the ATSI cabinet in the control building. Modifications to existing sensor supports as well as any new conduit supports were designed per seismic category II requirements. New cards were installed in the EN cabinet to replace the functionality of the existing GE cards that are located in the ATSI cabinet. Resistors were added on the loops at the IPC to convert the 4-20 mA signal from the BN cards to a 1-5 V signal. A new, standby AC power source was provided to the TDIX units in the Main Turbine and Steam Generator Feed Pump Turbine monitoring cabinets. This prevents a loss of data when normal power is lost. The existing uninterruptible power supply in each cabinet was removed.

The main turbine, feedwater pump turbines, and existing advanced turbine supervisory instrumentation (ATSI) are described in the FSAR. However, the FSAR does not contain the level of detail describing the components associated with this modification. Thus, the replacement of the instrumentation and addition of the standby power did not require revisions to the FSAR. The equipment continues to perform its monitoring function following this change. The Technical Specification was unaffected by this change. The monitoring functions were not the subject of the TS Bases or TRM. Therefore, TS Bases, and TRM were unaffected by this change. No procedures described in the FSAR were modified as a result of this change. The proposed design change was not a test or experiment.

DCP: 98-V1N0035/98-V2N0036
DCP TITLE: 7300 System OTDT/OPDT Margin Recovery Program

DESCRIPTION: Both Vogtle Units experienced steady state a periodic hot leg temperature fluctuations. This is not a unique Vogtle phenomenon; similar effects have been noted at other Westinghouse plants. Although, no definitive causes for the temperature fluctuations have been identified, they are believed to have been caused by the upper plenum flow anomalies. Three RTDs are used to account for temperature streaming in order to provide an average temperature in the hot leg. Since the average of the three RTDs is used to represent the hot leg temperature, temperature fluctuation from any RTD can adversely affect the calculation of the average T-hot temperature. This, in turn, impacts the average RCS temperature and ΔT and, hence, reduces the steady-state operating margins to Overtemperature Delta Temperature (OTDT or OTΔT) and Overpower Delta Temperature (OPDT or OPΔT) reactor trip and turbine runback setpoints. In addition the analysis contains sufficient margin such that the implementation of revised T-hot Average Scaling was no longer required. To accommodate the effects of streaming and the associated hot leg temperature fluctuations, Westinghouse developed a Margin Recovery Program (MRP) for VEGP. The MRP modified the parameters used to determine the OTΔT and OPΔT setpoints (i.e., K values and associated dynamic compensation terms). The relaxation of the OTΔT and OPΔT setpoints was achieved by means of a combination of improved methods for core thermal analysis and revised core thermal limits. The margin between turbine runback and reactor trip was expanded from 1% of rated thermal power (RTP) to 3% of RTP.

EVALUATION SUMMARY: The revision of the fundamental setpoint parameters K1 (OTDT) and K4 (OPDT) result in moving the setpoints in an adverse direction, increasing the steady-state margin. The changes in the dynamic compensation terms result in delaying initiation of an OTDT or OPDT trip during certain transient. Changes to the Setpoint Supervision constants did not affect the functions associated with the Integrated Plant Computer. The 7300 System cabinet wiring was performed in accordance with approved wiring techniques and did not adversely impact the protection cabinets. Plant procedure 88016-C, Determination and Verification of Delta T /T_{ave} Protection Channel Calibration and the associated loop calibration and analog channel operability test (ACOT) procedures were revised to account for the changes described. However, the changes did not have an adverse impact on the performance or method of control of a design function as described in the Updated FSAR. No impacts to abnormal and emergency response procedures are anticipated. As addressed in the Technical Specification submittal, all the methodologies used to evaluate the MRP changes are approved for use on Plant Vogtle. Therefore, there was no adverse change to a method of evaluation or use of an alternate method of evaluation from that described in the Updated FSAR. This design change did not involve a test or experiment. The NRC issued Amendments 128 and 106 to Facility Operating Licenses NPF-68 and NPF-81 on June 4, 2003.

As shown in the MRP Technical Report (1X6AA02-00562), Westinghouse had evaluated the MRP changes and determined that the changes associated with the OTDT and OPDT reactor trips would not adversely affect the frequency of any of the analyzed accidents. Increasing the turbine runback setting from 1% to 3% decreased the frequency of occurrence for OTDT and OPDT reactor trips. Therefore, this change did not result in

more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the Updated FSAR.

The wiring changes to implement the τ 6 lag, and disable the lead-lag associated with τ 1 and τ 2 was added to the backplane of card frame 2 of each process protection cabinet. The new wiring was exercised through card and channel calibration activities prior to being placed in service. The NLL card currently used for TY-4*x*1C is suitable for use as TY-4*x*1J (where *x* is the RCS loop number) after the wiring changes was made. No cards were being added or removed from the cabinets, so there is no impact on the cooling or power supply design features of the cabinets. The equipment qualification requirements continue to be satisfied in the main steam isolation valve (MSIV) areas of the plant. The software changes to the IPC was verified and validated to ensure that performance of the IPC was not adversely impacted. Therefore, this change did not result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the Updated FSAR. A small increase in steam blowdown may occur. However, this will not increase RCS leakage which is the controlling source of radioactivity. Therefore, there would be an insignificant increase in radiological consequences associated with a main steam line break outside containment as shown in FSAR table 15.1.5-3. Therefore, this change did result in more than a minimal increase in the consequences of an accident previously evaluated in the Updated FSAR.

The fuel cladding will be maintained within acceptable limits, ensuring that fission product contributions to events analyzed in the UFSAR remain bounded. The software changes to the IPC were verified and validated to ensure the SPDS and post-accident functions of the IPC were not adversely impacted. Therefore, this change did not result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the Updated FSAR.

The accident initiators associated with the OTDT and OPDT trip functions are identified in Table 7.2.2-1. The wiring changes in the protection cabinets, and the changes to the IPC software introduced no new failure modes. Therefore, this change did not create the possibility for an accident of a different type than any previously evaluated in the FSAR.

No new cards were being added to the 7300 System. The wire used to make the changes was designed for use in 7300 System cabinets. The design features of the card racks were not impacted by the wiring changes. The 7300 System Process Protection racks were designed such that card malfunctions, for example power supply failures, will not propagate to otherwise unaffected loops. This was done through both rack design and channel separation. Malfunctions of the process instrumentation and control system are described in UFSAR sections 7.2, 7.3, and 15. Each 7300 cabinet is assigned to a different protection channel and is isolated from the other channels. The cards are qualified such that there are no common mode failures. Malfunction of any card in any OTDT or OPDT channel will only impact its associated protection channel. The software changes to the IPC was verified and validated under to ensure that performance of the IPC is not adversely impacted. Therefore, this change did not create the possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the Updated FSAR.

DCP: **98-VAN0064**
DCP TITLE: Surge Protection

DESCRIPTION: On June 9, 1998, the surge capacitor located at the Unit 2 Condensate Pump Motor C failed. Due to this failure, REA 98-VAA080 was generated to determine if surge protection was needed on the 13.2 kV motors at VEGP. SG-16558 recommended that lightning surge protection (arresters) be provided for 13.2 kV outdoor applications and indoor locations with surge levels above 2 per unit (21.6 kV line-to-ground peak). The response recommended new surge arresters be added to the following: Reactor Coolant Pump motors, Condensate Pump motors, and Circulating Water Pump motors. The existing surge protection for the Reactor Coolant Pump motors is surge capacitors. Unit 1 Condensate Pump motors currently do not have any surge protection, while the Circulating Water Pump motors and Unit 2 Condensate Pump motors utilize surge capacitors in combination with surge arresters. Along with the 13.2 kV applications, it was also recommended that lightning surge protection (arresters) be provided for the 4 kV motors in outdoor applications. The affected 4 kV motors were the River Water Intake Pump and Turbine Plant Cooling Water Pump motors, which utilized surge capacitors and obsolete surge arresters. The existing surge protection (surge capacitors and obsolete surge arresters) utilized to protect each motor from damaging voltage surges was removed and replaced with new surge arresters.

EVALUATION SUMMARY: This design change package installed new lightning surge protection (arresters) and removed the existing surge protection (surge capacitor and obsolete surge arresters) from operation. Surge arresters were be utilized to provide the necessary surge protection to enhance plant reliability and personnel safety. The surge arresters were designed to limit the surge voltage magnitude by conducting the surge current to ground, which protects the motor's insulation to ground capabilities. For the 13.2 kV motors, single-pole station class arresters were installed, which have a duty cycle voltage of 15 kV and a maximum continuous operating voltage (MCOV) of 12.7 kV. The 4 kV motors utilize intermediate class arresters. These arresters are also single-pole with a duty cycle voltage of 4.5 kV and MCOV of 3.7 kV.

The utilization of surge protection devices (surge capacitors and/or surge arresters) is not described in any of the licensing documents. There is not a change to the plant as described in the FSAR, Technical Specification (TS) Bases, or Technical Requirements Manual (TRM). This change was not a test or experiment.

Loss of a Reactor Coolant Pump motor will result in a decrease in reactor coolant flow as analyzed in the accident analysis in FSAR chapter 15.3. Loss of more than one Condensate Pump motor per unit could result in a decrease in heat removal by the secondary system as analyzed in FSAR section 15.2. Loss of a Circulating Water Pump motor could result in a turbine trip and decrease in heat removal by the secondary system as analyzed in FSAR section 15.2. Loss of both Turbine Plant Cooling Water Pump motors will result in a turbine trip and decrease in heat removal by the secondary system as analyzed in FSAR section 15.2. An analysis was performed that shows surge arresters, without the surge capacitors, provide adequate surge protection for the expected surge levels on the electrical system. There was an occurrence during the analysis where the voltage surge was above the insulation capability, referenced in IEEE Standard 522, of the 13.2 kV and 4 kV motors. Due to the small time duration (< 0.2 msecs) and the conservatism of the IEEE Standard 522 insulation capability curve, the motors' and surge arresters' abilities to ground a damaging voltage surge exceeds the curve supplied by

IEEE Standard 522. In addition, the surge arresters are more reliable and require less periodic inspection and replacement. Therefore, the replacement of the existing surge protection with surge arresters enhanced reliability of the motors and did not increase the probability of an occurrence of an accident previously evaluated in the FSAR. Loss of one or more of the River Water Intake Pump motors would not have an immediate affect on plant operations or accident analysis since these provide make-up water to the cooling tower basin sumps. Because of the size of these sumps, from which the Circulating Water pumps and Turbine Plant Cooling Water pumps take suction, sufficient time exists for these pumps to be restored; or other means provided for make-up such that no accident analysis is affected.

DCP: 99-VAN0014
DCP TITLE: Tray Separation

DESCRIPTION: REA 98-VAA631 evaluated the spatial separation between cables located in Train A Class 1E cable tray 1AE414TEAG and an adjacent N-Train, Non-1E Calvert Bus. Design drawings had indicated that a solid vertical fire barrier was installed to meet the Regulatory Guide 1.75(RG 1.75) power cable spatial separation requirements between the Class 1E and Non-Class 1E cables located in these cable trays. In addition, there was not enough physical separation between these trays (as reported in Deficient Condition DC-119980042) to meet the separation requirements of RG 1.75 without the fire barrier being installed. A field inspection report revealed that the vertical fire barrier had not been installed as indicated on the layout drawings. This inspection also noted that other fire barriers in the Unit 1 and Unit 2 Auxiliary Building and the Unit 2 Fuel Handling building were not installed as shown on design drawings. This DCP provided the design to install top and bottom tray covers as enclosing barriers on existing cable tray where needed to resolve Regulatory Guide 1.75 power cable spatial separation problems. Where Regulatory Guide 1.75 power cable spatial separation requirements are met without the need of any type of separating barrier, either solid, vertical, horizontal or the enclosing type, the affected design drawings were revised to remove the requirements for fire barriers. No existing tray covers or fire barriers were removed, only the as built condition of the plant was documented.

EVALUATION SUMMARY: REA 98-VAA631 recommended installing a solid enclosing barrier around the affected portion of cable tray 1AE414TEAG to eliminate the need for the solid vertical fire barrier and meet the requirements of RG 1.75. The use of an enclosing barrier is described in section 6.1.4 of IEEE Standard 384-1981, specifically illustrated in Figure 4. IEEE 384-1981 was adopted by Plant Vogtle effective April 1990, replacing an earlier version, IEEE 384-1974, as referenced in FSAR section 1.9.75.2. REA 98-VAA631 recommended that the enclosing barrier can be installed by using top and bottom cable tray covers placed on the affected portion of the tray without any air gaps. The use of tray covers as solid enclosing barriers to resolve separation problems was also recommended for the areas in the Unit 1 and Unit 2 Auxiliary Building and the Unit 2 Fuel Handling building where the fire barriers were not installed.

Modification calculations and an Engineering Justification calculation were prepared to evaluate each separation problem and where required to resolve separation problems, the impact of adding tray covers. In some cases, the use of Siltemp or silicon dioxide cloth, which is a qualified non-combustible separation barrier material as specified in specification X3AR01-E8, was evaluated for use. Standard design details were used to

install the new cable tray covers and Siltemp. These design calculations show that in all cases that the ampacities of the cables in the affected cable trays, which are de-rated due to the addition of cable tray covers, met design requirements of DC-1809. The affected cable tray supports were analyzed and were adequately sized to support the additional weight of the cable tray covers.

The new cable tray covers were made of non-combustible galvanized 18-gauge steel, which is the minimum required steel size for a fire barrier as required in specification X3AR01-E8. Both the new cable tray covers and Siltemp are considered non-combustibles. Therefore, no combustibles were being added by this DCP.

DCP: 99-V1N0058
DCP TITLE: DG Fuel Oil Transfer

DESCRIPTION: This DCP installed a cable in the Diesel Fuel Oil Storage Tank Building to allow any of the transfer pumps to be powered from A-train or B-train sources. This facilitates the transfer of diesel fuel oil between A-train and B-train storage tanks when either A-train or B-train power is unavailable. The design change allows transfer of fuel oil from the A-train storage tank to the B-train day tank or from the B-train storage tank to the A-train day tank when either the A-train or B-train power is unavailable.

EVALUATION SUMMARY: FSAR Table 9.5.4-2 item no.1 was revised to include a statement that a permanently installed, de-terminated cable is available to facilitate the transfer process when A-train or B-train power is not available. The proposed change did not affect any procedures described in the FSAR. No new procedures were added to the FSAR as a result of the proposed change. The changes addressed by this design change did not involve a change to a method of evaluation or use of an alternate method of evaluation from that described in the UFSAR that is used in establishing the design bases or in the safety analyses. This design package did not represent a test or experiment not described in the UFSAR. There was no change to effluent limits or radiological environmental monitoring because of preparatory changes this DCP provides. The design change added a cable to facilitate fuel oil transfer when A-train or B-train power is not available. With the loss of offsite power it will be necessary at some point to transfer fuel to the tanks of the running diesel generator. The interconnecting cable could be connected and configured to operate either of the fuel oil transfer pumps from the train opposite to the running diesel generator.

The design utilized cable, conduit, connectors and fittings, which are acceptable for use at Plant Vogtle. No new active components were introduced. The new cable was installed using standard accepted practices and safety-related materials. No new failure modes were introduced for the components already in place. Provisions were made in the design to preserve the independence of A-train and B-train systems and components during normal plant operations. Administrative controls ensure that the interconnecting configuration is only utilized with the loss of offsite power and the need to transfer fuel from a storage tank where power to the associate transfer pumps is unavailable.

DCP: 00-V1N0035
DCP TITLE: OTDT Hi Limit Clamp

DESCRIPTION: A limit on the average temperature (Tavg) portion of the Over Temperature Delta Temperature (OTDT) reactor trip function was being added to the reactor trip system. This limit or "clamp" addressed design issues related to fuel rod cladding stress under transient conditions. The limit was applied on the Tavg difference signal by a new control card installed in the 7300 process protection system racks. The card was set such that the temperature contribution was limited (clamped) to a value 3 degrees lower than the reference temperature for the associated loop. The changes involved revised the OTDT instrument loop hardware and/or wiring in each protection cabinet (1-1604-Q5-PS1, PS2, PS3, and PS4, project class 1IJ) to provide the required clamping capability. The OTDT setpoint equation shown in Technical Specification 3.3.1 was revised to describe the temperature clamping function. Revision of this equation required NRC approval prior to implementation. Westinghouse performed a *50.59* review of the addition of the NSA card and documented their review in evaluation number 01-051. The NRC issued Amendments 127 and 105 to Facility Operating Licenses NPF-68 and NPF-81 on August 8, 2002.

EVALUATION SUMMARY: FSAR section 7.2.1.1.2 (Reactor Trips), B. 1. (Overtemperature ΔT Trip) was revised to describe the clamping function in the OTDT equation. A new sentence was added as follows: "For Tavg <T°avg, the value of (T°avg — Tavg) is clamped to limit the increase in the setpoint during cooldown transients." Annunciator Response Procedure (ARP) 17010-1 provides guidance for the operators in response to the Delta Flux alarm. The operating limits are not listed in procedure; it refers to Tab 6 of the Plant Technical Data Book (PTDB). The PTDB was updated to reflect the revised limits based on the COLR revision.

This change did not involve an adverse change to a method of evaluation or use of an alternate method of evaluation from that described in the Updated FSAR. This design change did not involve a test or experiment.

There was no increase in the frequency of occurrence of accidents because the temperature limit is not credited in the safety analysis. The channel response time was verified to be within the safety analysis assumptions with the new NSA card installed. The calibration accuracy of the new NSA card is consistent with existing NSA cards currently installed in the OTDT loops. The string calibration accuracy remains within the previously evaluated OTDT uncertainty calculation values. Therefore, this change did not result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the Updated FSAR.

DCP: 00-V2N0059
DCP TITLE: Reactor Water Makeup Control

DESCRIPTION: Due to the present setup of flow controller FC-0110, when a blended makeup is demanded, boric acid flow control valve FV-0110A initially shot to a full open position due to the error signal present at the controller card in the 7300 system. The error was caused by the difference between the boric acid flow transmitter signal and

the setpoint signal at the start of the evolution. Once flow was established through the valve, the flow control loop attempted to control flow at the designated setpoint. However, in some instances flow oscillated to try to reach the desired setpoint and sometimes required operator intervention to manually position the boric acid flow control valve FV-0110A. This change improved controllability of the boric acid flow control loop by modifying the boric acid flow control loop within the 7300 system.

During blended makeup evolutions, the boric acid flow control valve FV-0110A will go to a pre-determined set point closely equated to the demanded flow rate set at the flow controller manual/auto station. Modifications to the associated electrical circuits utilized timers to control the time that the valve is directed to go to the pre-determined setpoint without feedback control. After the timed evolution has terminated and boric acid flow has stabilized, the feedback circuit will be enabled and the valve position would then be fine-tuned to control flow at the designated setpoint. This change also incorporated a time delay on the opening of makeup water valve FV-0111A during automatic or manual makeup to improve the mixture of boric acid and reactor makeup water through the blender. This change helped the makeup system more closely deliver the desired composition of make up to the RCS by allowing the boric acid flow path to establish adequate flow to the blender before establishing reactor makeup water flow. This change did not affect the valve stroke time on closure or incorporate a time delay in the closure of the valve. Therefore, its design function to terminate inadvertent boron dilution is unaltered.

EVALUATION SUMMARY: This modification changed the boric acid flow control loop by modifying the 7300 system such that when a blended makeup is demanded, the boric acid flow control valve FV-0110A will go to a pre-determined setpoint closely equated to the demanded flow rate. This significantly reduces valve overshoot caused by the initial error signal present in the control loop at the start of the evolution. The referenced sections of the FSAR describe that the boric acid flow control valve is positioned during makeup and boration evolutions utilizing the flow controllers. The additional cards and timers used in the generation of the control signal did not require changes to the Updated FSAR; however, these modifications potentially increased the failure probability of equipment important to safety. TRM Section 13.1 requires the boric acid flow control valve to be capable of providing 30 gpm of flow. Modifying the control loop does not affect the capability of the valve to meet its 30 gpm requirement. The modification also incorporates a time delay on the opening of the makeup water valve FV-0111A during automatic and manual makeup evolutions to compensate for the time it takes the boric acid flow path to establish flow to the blender. This resulted in improved composition of blended makeup. Two potential failures associated with the modification to the FV-0111A valve are "failure to open" or "failure to open with a timed delay" as designed. Both scenarios, as well as the change to the boric acid flow control loop, are bounded by the accident analysis associated with a boron dilution event, FSAR section 15.4.6. In the accident analysis, an assumption is made that the boric acid flow control valve fails closed during makeup. Therefore, this modification did not impact the accident analysis and did not adversely affect the design function of the system. The addition of 7300 cards to the process control cabinet and relays/timers to the auxiliary relay cabinet in the main control room had no adverse affects on hazards analysis.

DCP: **01-V1N0032/01-V2N0033**
DCP TITLE: **Control Mods for Main Feed Reg Valves**

DESCRIPTION: The steam generator level control loops were being modified in that a second tracking driver (NTD) card was added to each of the four steam generator level control loops in the 7300 Process Control System. The modification: 1) provided an automatic bumpless switchover to the second NTD card in the event that the "Power Supply Fail" signal falls to zero in the first NTD card and 2) allowed maintenance to be performed on the failed NTD card while the plant is operating. Adding the second NTD card minimized challenges to the protection system by eliminating a source of reactor trips due to a single failed NTD card. Additionally the solenoid logic on the main feedwater regulating valves (MFRV) was modified from a parallel type vent path to a series type vent path. The original design required the operation of either to allow venting of the air from the operator which would close the associated MFRV. The modified operation required both solenoid valves to operate to vent the air from the operator to close the MFRV. This modification to the NTD cards was an enhancement to the feedwater control.

EVALUATION SUMMARY: The modification did not create any new transients. Installation of the new dual NTD configuration and wiring changes were performed only inside the 7300 Process Control Cabinet. The new dual NTD configuration required a new NTD card, NRC card, NCI card and a new eprom for the existing NTD card for each feedwater loop in order to support the transfer scheme. The input signals to the steam generator level control loops (steam flow/feedwater flow, steam generator level setpoint and steam generator level) were not changed as a result of this modification. In addition, the 4-20 ma output signal generated for the I/P converter feedwater control valve is the same as before the modification. The only difference is the 4-20 ma output signal generated for the feedwater control valve was provided by one of the two NTD cards.

With the modified solenoid design, if one of the solenoid valves fails to operate when required the respective MFRV would not close as designed in the feedwater isolation system. However, no other single failure would be postulated and the main feedwater isolation valves (MFIV) would be assumed to operate as designed. This can be accomplished since the MFRVs are backup isolation valves to the MFIVs and the operation of the MFIVs will be accomplished even with the failure of a single channel of isolation logic. The MFIVs are provided with dual pneumatic/hydraulic power trains each receiving signals from a separate ESFAS train. The redundancy built into the MFIV closure system prevents any single failure other than a mechanical type failure of the valve itself from preventing the MFIV from performing its design function. If the mechanical type failure occurs, it becomes the assumed single failure and the modified control logic on the MFRVs will be assumed to work as designed. None of the indicators, alarms, accuracies, ranges, time responses, controller transfer functions, etc. in the feedwater control system was required to be changed due to the installation of a dual NTD card in the steam generator level control loops.

In addition, feedwater control and isolation functional drawings were not required to be changed due to this modification. The NTD cards were bench calibrated at the site before the cards are installed in the 7300 Process Control Cabinet. After implementation of the dual tracking driver configuration in the 7300 Process Control System, each loop of the steam generator level control was tested. Assuming that the NRC relay card is similar to

that of the NTD card, the result would be higher signal reliability, compared to the existing circuit's, for the parallel NTD circuit with the NRC card in series provided by this modification. The 7300 System power supply design allowed the utilization of all the card frame slots in the cabinet. At Vogtle, the redundant NTD configuration was installed in previously unused card slots. The card frames involved with this change are relatively lightly loaded; therefore, there was more than adequate power capacity available within the cabinets and card frames involved. The 7300 Process Control cabinet was worst case tested (with all card slots filled) for operation at elevated temperature. The heat generated form the two additional NTD cards did not exceed the tested configuration in WCAP 8687 Supplement 2E13C. The NTD cards are seismically qualified to the generic requirements in the 7300 Process Control System reports in WCAP 8687 Supplement 2E13C. The two solenoid valves are mounted to the bonnet of the MFRV; to convert them to series operation a small tubing change was required. The tubing run is very short and rigid and there is no potential for differential movement between the solenoid valves so therefore the run of tubing does not have to be seismically analyzed. If the tubing were to be broken then the isolation function would occur as designed. The only failure mode that could potentially prevent the isolation function would be for the tubing to become pinched to the point that no flow could pass. Due to the extremely short runs and rigidity of the 3/8" x 0.065 wall stainless steel tubing this failure was not assumed to be credible, since there was no potential for differential movement between the solenoid valves. In summary, this modification is a design enhancement to the control system and valve operation not required for safety. This modification will not initiate or prevent any existing safety related functions.

This modification is a design enhancement intended to prevent challenges to the plant by preventing trips due to single failures in the feedwater control system. After the modification the steam generator water level control system continues to establish and maintain the steam generator water level within predetermined limits during steady state and normal operating transients. The changes to the dual NTD card logic did not require any changes to the updated FSAR; however the changes to the solenoid logic required changes to the updated FSAR and to the Technical Specification Bases.

MDC No: 00-VAM019
MDC TITLE: Well Number 2A Casing Replacement and Pump Modification

DESCRIPTION: This activity refurbished the Well No.2A casing and pump. The Well is part of the Plant Makeup Well System which provides makeup well water to the fire water system, potable water system, demin water system, utility water system, and is the normal makeup to the NSCW cooling tower system. Refurbishment of the casing involved cutting and removing all the existing 10" casing and screens. A new string of 10" SST casing and screens were put in place from approximately 260' to 865'. A 14" liner was then placed from 0' to approximately 280'. Well No. 2A capacity was reduced from 2000 gpm to 1000 gpm to alleviate capacity problems with the well. The change from 16" upper casing diameter to 14" diameter had been reviewed as an acceptable deviation from VEGP Design Criteria DC-2121.

EVALUATION SUMMARY: UFSAR Sections 2.4, 9.2, and 9.5 provide a description of the Makeup Wells and their interfaces with the other plant systems such as NSCW, Potable Water, and Fire Protection Systems. Section 2.4.12 provides detailed descriptions of the well capacity, depth, and casing design. Sections 2.4.11 and 9.2.4.2 discuss the makeup to the NSCW Tower and Potable Water Systems, respectively, as being from two makeup wells capable of supplying 2000 gpm. The reduction in capacity associated with Well No. 2A required a revision to Sections 2.4.12, 2.4.11, and 9.2.4.2 of the UFSAR. In addition, changes resulting from the well depth and screen opening required a revision to Section 2.4.12. The reduction in capacity of Well No. 2A, however, did not affect the ability of the Plant Well Water System to fulfill its ability to supply the Fire Protection Programs' required flow rate of 650 gpm as discussed in Section 9.5 of the UFSAR. The modification did not alter or damage the function of any involved components or safety related components which are assumed to function during any UFSAR Chapter 15 analysis, nor did it compromise safety-related systems or prevent a safe shut-down of the plant. The activity did not require a change to the Technical Specifications. This change did not involve an unreviewed environmental question as described by Section 3.1 of the Environmental Protection Plan.

MDC No: 00-VAM033
MDC TITLE: Replacement or Deletion of Smoke Detectors Subject to Spurious Alarms

DESCRIPTION: This change replaced numerous ionization smoke detectors with thermal detectors and deleted some ionization smoke detectors. The ionization detectors in the scope of the change were subject to ambient conditions and produced spurious alarms due to changing weather conditions.

EVALUATION SUMMARY: The detectors are listed in UFSAR Table 9.5.1-10A along with which type of detector is used in each fire zone. A licensing document change request updated UFSAR Table 9.5.1-10A to reflect the current detector configuration in the fire zones changed by this activity. The changes support the defense-in-depth approach of the fire protection program. The changes provide more appropriate fire detection in the affected areas and do not reduce the effectiveness of the program. The fire detection system is not safety-related and is not relied upon to affect the safe shutdown of the plant. The fire detection system is not referenced in the Technical

Specifications and does not reduce the margin of safety as defined in the bases for any Technical Specification.

MDC No: 00-V2M054
MDC TITLE: Drain Valves for the Blind Flanges on the NSCW to Normal Chilled Water Cross Connection Lines

DESCRIPTION: This change installed valves, piping, and pipe caps on the NSCW Cross Connect Flanges to allow drainage of the NSCW System piping to support installation of the cross-connect spool pieces to the Normal Chilled Water System. The modified flanges were installed as ASME Class 3 components and are consistent with the existing NSCW system design. Pipe stress calculations EF02703 rev. 3 and EF02724 rev. 2 were reviewed for the added weight of the drain line assemblies and found to be acceptable.

EVALUATION SUMMARY: Installing additional system components constitutes a change to the NSCW P&ID which is referenced in the UFSAR; however, the change does not adversely affect the performance of system design functions for the NSCW System. UFSAR sections 7.3.9, 9.2.1, and 9.2.5 were reviewed for impact. The activity did not require a change to the Technical Specifications based on a review of sections 3.7.8, 3.7.9, and 3.6.3. The Environmental Protection Plan was not affected.

MDC No: 01-VAM040
MDC TITLE: Motor Operator Removal from Elevator Shaft Tornado Dampers

DESCRIPTION: This MDC removed motor operators from several elevator shaft tornado dampers. This changed the documented normal configuration from normally closed to normally open and removes any remaining fire zone interlocks with these dampers. The dampers were originally designed as dual purpose dampers which function to both vent smoke from an elevator shaft and close for pressure protection in case of a tornado. An evaluation found that these functions could be adequately served by the dampers remaining in a normally open configuration. The dampers will remain operable to vent smoke from the elevator shaft and close in the event of a tornado to offer pressure protection for the building.

EVALUATION SUMMARY: P&IDs associated with these dampers include 1X4DB208-1, 2X4DB208-1, and AX4DB237. These drawings are referenced in the UFSAR under sections 9.4.3.1.2.1 and section 9.4.1.2.2 and section 1.7. This activity required a revision to these drawings. The fire zone interlocks that were removed from service are not described in the UFSAR. The activity did not represent a change to that adversely affects any design function as described in the UFSAR. This activity did not represent a change to any procedure as described in the UFSAR. There was no change to the Technical Specifications or the Environmental Protection Plan.

MDC No: 01-V1M043
MDC TITLE: RHT Vent Eductor Orifice Replacement

DESCRIPTION: This MDC replaced the RHT Vent Eductor from a Penberthy Houdaille model SPC'L 5A Ejector to a Penberthy Model GL-1"-316 Jet Pump to increase flow capability to range of 1 to 3 SCFM. In addition the eductor classification changed from 313/LL2 to 417/LL3 and associated piping from 313/LL2 to 313/LL1. The materials are rated at the same pressure.

EVALUATION SUMMARY: This change did not adversely affect a design function of the Boron Recycle System or Gaseous Waste Management System as described in UFSAR Section 9.3.4.2 and UFSAR Section 11.3, respectively. This change procured the eductor as class 417/LL3; this deviates from UFSAR Table 3.2.2-1 classification of the Boron Recycle System Recycle Holdup Tank vent eductor and Gaseous Waste Process Piping which classifies it as 313. A licensing document change request updated UFSAR Table 9.3.4-3 to incorporate changes concerning suction flow and construction material of the ejector. The original RHT vent eductor was procured as safety related but it does not perform a safety function. The vent eductor is not required to respond to any accident, and is not included in any evaluation of an accident in the UFSAR. Failure of the component will not compromise any safety-related system or prevent a safe plant shutdown. Failure of the RHT vent eductor is bounded by the WGDT failure which is described in UFSAR Section 15.7.1 The scope of the change did not require a change to the Technical Review Manual Section 13.12 which describes the explosive gas monitoring instrumentation or Technical Specifications 3.7.6 which describes plant systems. No changes were required to the Environmental Protection Plan.

MDC No: 01-VAM056
MDC TITLE: Potable Water Sodium Hypochlorite Injection System Modifications

DESCRIPTION: One of the two Sodium Hypochlorite Injection Pumps, project class 626, was removed along with its associated valves and pipe fittings. A hose connection fitting was added to the Potable Water line so that water would be available for washing down the sodium hypochlorite skid in the event of a spill.

EVALUATION SUMMARY: The removal of one Potable Water Sodium Hypochlorite Injection Pump and the addition of a hose connection to the potable water line did not constitute a change in design function. One pump will adequately supply the requirements of the potable water system. A backflow preventer and isolation valve was installed in the wash down connection to reduce the possibility of cross contamination as required by UFSAR section 9.2.4.2.2.7. Updated FSAR Sections 9.2.4, 9.3.7 and Chapter 15 were reviewed. A licensing document change request was submitted to revise UFSAR Sections 9.2.4 and 9.3.7 to reflect the removal of one sodium hypochlorite pump. The potable water system is not part of the Technical Specifications and Environmental Protection Plan incorporated in the Operating License, so this modification did not involve a change to these documents.

MDC No: 02-V2M026
MDC TITLE: Reactor Coolant Drain Tank Pump Bypass Keyswitch

DESCRIPTION: The activity installed a keyswitch on the Waste processing/Boron Recycle panel that can be used during refueling outages. The keyswitch bypasses the low flow shutoff function associated with flow transmitter 2FT-1008 in the RCDT pump control logic to enable the pumps to run continuously as needed.

EVALUATION SUMMARY: The instrumentation used to stop the RCDT pumps when flows reach a minimum setpoint is directly referenced in UFSAR section 11.2.2.7. A licensing document change request was submitted to allow the use of the keyswitch. Operations procedure 13004-2 is used to align the PRT to the RHUT using the RCDT pumps. During this operation, the flow discharge of the RCDT pumps are below the minimum setpoint described in the UFSAR 11.2.2.7. While drain down activities may result in flow rates less than those recommended by the pump vendor, increased monitoring guidance of the pump performance was placed in the applicable operating procedures. The modification to the RCDT pump control logic does not involve a method of evaluation or alternate method of evaluation as described in the UFSAR including section 11.2. A review of the Technical Specifications and the Environmental Protection Plan found no impacts.

MDC No: 02-VAM074
MDC TITLE: Relocation of Load on Breaker 2NYE109 to Breaker 2NYE107

DESCRIPTION: MDC 02-VAM074 relocated the load on breaker 2NYE1-09 to breaker 2NYE1-07 because breaker 2NYE1-09 was damaged and could not be removed from the panel for surveillance testing. Breaker 2NYE1-07 was determined to be a suitable replacement for breaker 2NYE1-09.

EVALUATION SUMMARY: The design function of breaker 2NYE1-09 was mentioned in UFSAR Table 16.3-5 as a Containment Penetration Overcurrent Protection Device for Containment Building Aux. Cooling Unit Fan Motor Heater. Relocating the load from breaker 2NYE1-07 altered the design function of 2NYE1-09 and transferred it to 2NYE1-07. Therefore, a licensing document change request was submitted to update UFSAR Table 16.3-5. The activity did not represent a modification, addition to or removal of a structure, system, or component (SSC) such that a design function as described in UFSAR sections 8.3 or 16.3 was adversely affected. There was no impact to the Technical Specifications as reviewed in section 3.8.

MDC No: 03-V1M061
MDC TITLE: Turbine Building Oil Drain Piping Modifications

DESCRIPTION: This change modified the turbine lube oil system, generator hydrogen oil system and turbine drain system piping to prevent oil from entering the turbine building sumps through the oil system drain lines. The drain lines were routed to individual collection vessels which have their own drain lines to discharge oil into small containers.

EVALUATION SUMMARY: The function of the drain system as described in UFSAR section 9.3.3 is not adversely affected. Review of UFSAR Sections 9.3.3 and 11.2.2.5 found no procedures referenced for controlling the performance of the drain system. A licensing document change request was submitted to revise the descriptions of the turbine building drain system under Section 9.3.3 to indicate that some drain lines route their oily waste to individual collection vessels for separate off-site disposal. A review of the Technical Specifications and the Environmental Protection Plan found no impacts.

MDC No: 03-V2M062
MDC TITLE: Turbine Building Oil Drain Piping Modifications

DESCRIPTION: This change modified the turbine lube oil system, generator hydrogen oil system and turbine drain system piping to prevent oil from entering the turbine building sumps through the oil system drain lines. The drain lines were routed to individual collection vessels which have their own drain lines to discharge oil into small containers.

EVALUATION SUMMARY: The function of the drain system as described in UFSAR section 9.3.3 is not adversely affected. Review of UFSAR Sections 9.3.3 and 11.2.2.5 found no procedures referenced for controlling the performance of the drain system. A licensing document change request was submitted to revise the descriptions of the turbine building drain system under Section 9.3.3 to indicate that some drain lines route their oily waste to individual collection vessels for separate off-site disposal. A review of the Technical Specifications and the Environmental Protection Plan found no impacts.