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10CFR50.59

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May 27, 1988

10 June 2 10:00

Dr. J. Nelson Grace
Regional Administrator
U. S. Nuclear Regulatory Commission
Region II, Suite 2900
101 Marietta Street, N.W.
Atlanta, Georgia 30323

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
Annual 10CFR50.59 Report

Dear Dr. Grace:

Attached is the fifth Annual Report provided pursuant to 10CFR50.59(b) for the Virgil C. Summer Nuclear Station. This report includes a brief description of modifications made to the facility as described in the Final Safety Analysis Report (FSAR) and a summary of the safety evaluation of each. These modifications, identified by the Modification Request Form (MRF) number where applicable, were completed prior to August 6, 1987, which ended the fifth year following the issuance of the Facility Operating License.

If you have any questions, please advise.

Very truly yours,

D. A. Nauman

HID/DAN:bgh

Attachment

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FIFTH ANNUAL 10CFR50.59 REPORT
VIRGIL C. SUMMER NUCLEAR STATION

- MRF-10108 This modification provided an oxygen analyzer with an improved alarming unit and associated wiring to the Waste Process Panel. Additionally, the flow indicator in the sample line from the waste gas system to the O₂ analyzer was changed, thus deleting the need for power supply IFQ 1095-WG. This modification assures that the oxygen in the Waste Gas System will remain under 2% when Hydrogen concentration exceeds 4%. The margin of safety was not reduced.
- MRF-10200 This modification removed the tie-in to the Technical Support Center (TSC) equipment room from the safety related relay room ductwork in order to supply needed capacity for relay room temperature control. An additional air handling unit was added to the two previously installed air handling units in the TSC equipment room to provide adequate cooling for the computer auxiliary equipment. This modification met the intent of NUREG-0696 to maintain availability requirements for the TSC computer. The margin of safety was not reduced.
- MRF-10435 This modification provided piping of demineralized water to the oil analysis laboratory. The modification only affected NNS piping and equipment. The margin of safety was not reduced.
- MRF-10436 This modification provided piping for service air to the oil analysis laboratory. The modification only affected NNS piping and equipment. The margin of safety was not reduced.
- MRF-10490 This modification installed an orifice to produce backpressure for the Nuclear Blowdown radiation monitor. The backpressure allows the monitor to function properly when processing Nuclear Blowdown to the condenser. The margin of safety was not reduced.
- MRF-10506 This modification involved rerouting of piping from the sample sink for the radwaste solids handling system in order to bypass the leak detection tank to the waste holdup tank. This prevents false indication of leakoff rate and prevents back up in the sample sink. The margin of safety was not reduced.
- MRF-10781 This modification added curbs in a pump room in the auxiliary building to help control radioactive spills and prevent the spread of contamination from the spills. This modification will reduce the volume of area that a spill could affect and is in keeping with the ALARA policy. The curbs performed no active plant safety function; however, they have been designed to withstand failure in a seismic event so as not to impact any plant safety equipment. The margin of safety was not reduced.

- MRF-10843 This modification installed fuse blocks in a termination cabinet beneath the Main Control Board to distribute the load of the DC control power circuit. In addition, it provides identification of power feeds for various non-safety fuse blocks in the main control board. The margin of safety was not reduced.
- MRF-10879 This modification relocated temperature switches ITS-9854A & B to the correct building location as defined and evaluated in the FSAR. The margin of safety was not reduced.
- MRF-20118 This modification added standby cooling coils to rooms IB-463-01 and IB-436-01 enabling them to be maintained at design conditions during all modes of operation, thereby possibly reducing heat related failures. The change did not directly interface with any NSR equipment or systems and did not change any accident analysis. The margin of safety was not reduced.
- MRF-20261 This modification relocated a protected area fence to reduce radiation exposure to personnel. This modification is to non safety related fencing and did not reduce the margin of safety.
- MRF-20281 This modification involved reconstruction of an old computer room in the Control Building, elevation 436, for the addition of new security computers and peripheral equipment. The required HVAC and Fire Suppression equipment was added to the room and a new uninterruptable power supply was installed to provide a reliable power source. The modification provided the means to separate the Fire Service and Security computer networks. The margin of safety was not reduced.
- MRF-20303 This modification relocated the waste evaporator and boron recycle concentrate pumps to a new location to promote and enhance available pump head. Additionally, a new type pump was installed which assures a more reliable performance and reduces time required for maintenance activities. Additional shielding in the form of a concrete wall was utilized and air removal was increased over the pumps to pull air through a charcoal filter. This modification improved system performance and decreased accident possibilities associated with equipment malfunctions. The margin of safety was not reduced.
- MRF-20388 This modification converted the condensate pumps from variable speed to constant speed operation. The modification was implemented to improve the condensate system reliability. This modification to non-safety related equipment and components did not reduce the margin of safety.
- MRF-20462 This modification removed the Crosby Limit Switches on the pressurizer safety valves and replaced them with a qualified acoustic flow monitoring system. The new qualified equipment provides more accurate valve position indication. The margin of safety was not reduced.

- MRF-20482 This modification deleted the Boron Injection Tank (BIT), its inlet valves and the associated recirculation hardware and heat tracing. The high head safety injection was rerouted through the BIT outlet valves. Applicable safety analyses were performed, and the margin of safety was not reduced.
- MRF-20497 This modification replaced the magnetic-only breakers with thermal-magnetic breakers. The thermal trip protection added redundant protection. The margin of safety was not reduced.
- MRF-20579 This modification moved the four Refueling Water Storage Tank level transmitters inside the Auxiliary Building and also added a remote level indicator off of one of the level transmitter legs. The purpose of moving the transmitter was to eliminate the potential for freezing. The level indicator was added to fulfill an Appendix "R" requirement. The transmitters were designed and installed to meet all applicable safety criteria. The margin of safety was not reduced.
- MRF-20614 This modification added two buildings to the plant: the Auxiliary Service Building and Radiological Maintenance Building. The buildings were needed for computer office space and radiological maintenance, respectively. Both buildings are inside the plant Protected Area and the modification required relocation of the Protected Area fence. The margin of safety was not reduced.
- MRF-20624 This modification involved removal of heat tracing circuits on the NaOH tank recirculation line connection. The heat tracing is no longer required. The freezing point of 20-22% NaOH solution is below the lowest observed temperature for the plant; therefore, the plant margin of safety was not reduced.
- MRF-20720 This modification was implemented to meet Reg. Guide 1.97 Rev. 2, Post Accident Neutron Monitoring Requirements. The two existing nonqualified SR/IR channels were replaced with two fully qualified SR/IR excore detector channels. This modification has improved equipment reliability and post accident monitoring; therefore, the margin of safety was not reduced.
- MRF-20754 This modification added unions and pressure indicator connections to the pressure regulating valves in the Industrial Cooling Water System. The unions will save time in replacing the regulators which are on a 10 year replacement cycle. The pressure indicator connections will also provide the capability to adjust the regulators on line. All equipment and piping was Non Nuclear Safety (NNS) and the modification did not reduce the margin of safety.
- MRF-20768 This modification provided an access platform and ladder for the top of each of the two Waste Monitor Tanks. The reason for the addition was to provide a permanent means of access

for maintenance of agitators on top of the tanks. There is no safety-related equipment in the rooms where the tanks are located. Therefore, addition of these non-safety platforms did not reduce the plant margin of safety.

MRF-20784

This modification was the result of a 10CFR50, Appendix R re-evaluation. New DC Solenoid Valve disconnect switches provide sufficient electrical isolation to prevent spurious component operation which could occur due to postulated "hot shorts" caused by fire damage. The disconnect switches are passive devices which will be manually operated to ensure positive circuit opening in the event of a fire. Normal operation is not affected, since switches are normally closed. The functional intent of the control circuits, that contain the new disconnect switches, remains unchanged. Further, the operability of the devices was not degraded due to the high reliability of the switches and circuits that were added. The margin of safety has been increased since this modification provided additional fire damage mitigating capability.

MRF-20786/20789

These modifications installed local controls for selected 7.2 KV breakers for which the Appendix "R" analysis identified a need for local control. The modification allows these devices to be used in the event of a fire in the control room or other defined fire zones. These modifications did not change functional operation of the affected control circuits. The installed electrical switches are keylocked to prevent inadvertent actuation. Because of this, the probability of an occurrence or the consequence of an accident did not increase. The margin of safety was not reduced.

MRF-20799

This modification added a light and a ladder to improve access to an overhead door. The modification resulted from a personnel safety concern regarding access to the overhead door. The light and the ladder are non-safety and non-quality related. Therefore, they perform no plant safety function and also cannot impact any plant safety equipment in their installed location. The margin of safety was not reduced.

MRF-20801

This modification involved reassignment of the C Loop Wide Range T-cold instrument channel from channel IV to channel II. It involved routing new instrument cable from the Reactor Building to the Control Room to meet the requirements of Regulatory Guide 1.97 and Appendix "R". This modification did not alter the design basis of the plant and all operating parameters of the plant protection system were unchanged by this modification. The margin of safety was not reduced.

MRF-20805

This modification installed a NNS narrow range (0-10%) Steam Flow Transmitter on each steam generator and provided the output to the plant computer for demand access to meet Regulatory Guide 1.97 requirements and to provide Main Steam

Safety valve status requirements. The margin of safety was not reduced.

- MRF-20811 This modification involved replacement of non qualified limit switches (Namco EA170) with Environmentally Qualified Switches (Namco EA180) on various HVAC dampers that were part of the system for essential equipment areas. This was required by Regulatory Guide. 1.97. The margin of safety was not reduced.
- MRF-20826 The modification included the following: installation of redundant switches for various turbine trip circuits, installation of a turbine control valve test bias circuit, speed error filter circuit, and high energy 125 VDC EHC trip relays. It also modified the turbine throttle pressure limiter logic, throttle pressure compensator logic and power load unbalance logic. The modification was to improve the availability and reliability of the main turbine. The modification concerned NNS equipment and circuits which did not affect any Nuclear Safety Related (NSR) equipment or circuits essential to plant safety. Therefore, this modification did not reduce the margin of safety.
- MRF-20862 This modification added a flanged 2" inspection port on the inlet feedwater piping to each steam generator. This inspection port is used for routine inspection of the steam generator baffle plates. A piping analysis was performed for the modification and results proved acceptable with no change in the postulated break locations. The margin of safety was not reduced.
- MRF-20873 This NNS modification installed diodes across DC coil relays to prevent spurious RM-L8 (turbine building sump discharge radiation monitor) flow alarms caused by relay actuation noise. The modification also extended the time delay for the low flow alarm from approximately 7 seconds to approximately 15 seconds, revised RM-L8 inlet sample piping, added a 6" back flushable inlet strainer, and replaced the carbon inlet sample piping with stainless steel piping. The margin of safety was not reduced.
- MRF-20896 This modification added alternate control power fuses, transfer and selector switches to certain "B" and "C" train control schemes associated with fans required for hot stand-by operation. These interlocks provide local control of motor control center starters in the event of a fire in the Control Building as required by Appendix "R". Components added have been analyzed to insure qualification for their intended functions. In addition, electrical transfer switches are keylocked to prevent their operation except as required to mitigate an Appendix "R" type fire. The margin of safety was not reduced.

- MRF-20995 This modification changed the control of solenoids A and B of the main steam Power Operated Relief Valves (PORV) to deenergize to block steam for Appendix "R" considerations. The main steam PORVs will remain fail closed by design intent. Rework of the electrical and instrument air controls changed the steam dump block control from energize to a deenergize scheme. The margin of safety was not reduced.
- MRF-21013 This modification removed all electric/ pneumatic controls and installed a handwheel on valve XVB690 to prevent unnecessary plant trips. Previously, a loss of power to XVB690 would cause this valve to close and a plant trip. The margin of safety was not reduced.
- MRF-21015 This modification changed the piping between the IA compressor and the dryer from carbon steel to stainless steel. This will improve the cleanliness of the system by eliminating the rust in this pipe run. This modification will increase the reliability of other valves and equipment downstream of the replaced line. The margin of safety was not reduced.
- MRF-21018 This modification removed the oilers from the service air system and installed a moisture separator. This change was performed to clean up the air system by removing the oil and the moisture from the system. The service air system is all non-safety. The margin of safety was not reduced.
- MRF-21019 This modification added a moisture separator to the Service Air line to the service water and circulating water pump houses. This allows the water that condenses in the line over the long run from the plant to be removed without loss of line pressure or operator action. The safety margin was not reduced.
- MRF-21030 This modification installed a pressure equalization bypass across the condensate polishing system isolation valve (XVB-691A) to eliminate the difficulty of opening the isolation valve during condensate system operation. This modification of NNS components did not affect the margin of safety.
- MRF-21040 This modification of the relay logic controlling the chiller motor restart timing scheme reduced the probability of a timing scheme malfunction due to the loss of control power to the chiller motor control circuit. The modification also relocated components of the control scheme of the C-chiller and pump from the Upper Cable Spreading Room to the "C"-Chiller Room. This segregation minimizes the number of fires that can affect the chilled water system. The margin of safety has been increased since the modification provided additional fire damage mitigating capability.
- MRF-21061 This modification enhanced operator information by modifying selector switches, switch positions, modifying component arrangements and adding alarms as a result of the NUREG 0700

review. As such, the majority of the changes did not result in functional modifications to equipment. The margin of safety was not reduced.

- MRF-21062 This modification to WNS components installed a pneumatic actuator in each of the condensate pump discharge valves. The actuators are designed to automatically close the related discharge valve when the respective condensate pump trips. The modification also installed a level switch in the condensate system piping to indicate on the Main Control Board the presence of voided condensate piping. The purpose of this modification was to preclude the occurrence of water hammer when a condensate pump was started. The margin of safety was not reduced.
- MRF-21075 This modification added an HVAC system on the 425' elevation of the Control Building. This system was added to improve the working conditions of people utilizing this area for office space. The system and components were installed non-safety and non-quality related. The margin of safety was not reduced.
- MRF-21087 This modification enhanced the plant's safety by providing fire protection for "B" train circuits in the Service Water Pump House room 25-04. The modification ensures that two of three service water pumps are available, should a fire occur in fire area SWPH-2, by providing separation of "B" train and "C" train. The margin of safety was not reduced.
- MRF-21091 This modification adjusted the trip for the Control Rod Drive Mechanism cooling fan breakers to allow slightly more overcurrent for a longer period of time in order to avoid nuisance trips. The margin of safety was not reduced.
- MRF-21097 This modification provided the necessary revisions to plant documents and procedures to assure that the affected systems (CC, CS, SW and VU) operate as required, and to assure that a malfunction will not occur due to swing pump/chiller breakers being in the incorrect position. There were no hardware changes associated with this modification and the margin of safety was not reduced.
- MRF-21216 This modification increases the capacity of a 230 KV transmission line and reduces the possibility of an overload. The margin of safety was not reduced.
- MRF-31738 This modification deleted the low speed operation of the service water pumps by locking the speed changing switch in the high speed position. The speed switches had a history of problems and have been a continuing maintenance problem. All accident evaluations were based on the Service Water Pumps running in high speed. The modification simplified the control circuits by eliminating the need to change speeds in

the event of an accident. The margin of safety was not reduced.

MRF-31873 This modification provided for the installation of fuses and for the replacement of the control power transformers for XMC1DA2X-2AB and XMC1DB2Y-12GH. The replacement transformers (150VA) have an acceptable safety margin between maximum connected load and continuous rating (102VA vs 150VA). The modification replaced type C-H relays with new relays, with a new coil VA rating of 22VA versus 13VA. The margin of safety was not reduced.

MRF-32134 This modification replaced unqualified potentiometers on the NCH cards installed in the RVLIS with seismically qualified potentiometers. The margin of safety was not reduced.

MRF-32356 This modification installed a new timing relay in each of the panels XPN-5402-SW and 5403-SW, provided for the necessary wiring between these panels and the chiller skid mounted panels respectively, and connected the existing relay contacts in each of the chiller mounted panels. The remainder of the modification changed the control circuitry and method of implementation, but did not change the chiller functional operation. These changes decrease the probability of locking up the chiller during a restart attempt following a loss of offsite power or whenever an Engineered Safety Feature Actuation System restart is required. The margin of safety was not reduced.

MRF-32586 This modification corrected the indicator lights for XVG 3111 A & B and 3112 A & B on the main control board to provide the operators with correct valve positions. This modification did not reduce the margin of safety.

N/A This modification involved addition of indicators for wide range steam generator level channels L477, L487 and L497 to FSAR Table 3.11-0. These existing channels were not originally described in the FSAR. The margin of safety was not affected.

N/A This modification revised the FSAR Active Valve List Table and Containment Isolation Valve Summary table to agree with recent changes in valve testing requirements under the ISI Program. The periodic testing of additional Component Cooling Water System and Feedwater (Nuclear) System valves enhanced the overall reliability of the plant and, therefore, increased the plant's margin of safety. The reduced or deleted testing requirements for valves IVV-7096-CC, XVG-8701A-RH and XVG-8701B-RH did not affect the safety related functions of the Component Cooling Water or Residual Heat Removal Systems. Therefore, the plant's margin of safety was not reduced because of these valve testing changes.

N/A

This modification revised the FSAR to allow purge releases from the reactor building under any meteorological conditions. This presents no significant safety hazard to the public. Analysis has determined there is a slight increase in the possibility that higher dose to the hypothetical maximum exposed individual will exist. However, it is still within the limits and the margin of safety built into the overall release program.

N/A

This modification revised a radiological drawing to provide documentation of conduit fire wrap details and design references for future requirements. The margin of safety was not reduced.