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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Report of Facility Changes, Tests and Experiments

In accordance with 10 CFR 50.59(d)(2), the Report of Facility Changes, Tests, and Experiments for the Beaver Valley Power Station Unit No. 1 is attached. This report provides a brief description of facility and procedure changes which required a 50.59 evaluation and a summary of each evaluation. The report covers the period of January 23, 2000, through October 9, 2001, which corresponds to a period ending with Fuel Cycle 14.

If you have any questions regarding this report, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Corrective Action at 724-682-5284.

Sincerely,

Lew W. Myers

c: Mr. D. S. Collins, Project Manager
Mr. D. M. Kern, Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator

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Beaver Valley Power Station Unit 1
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Change Title

DCP 1269 – Modifications to Clarification Process in the Water Treating System

Change

This design change permitted replacement of clay, lime and ferric sulfate chemical feeders with a polymer feed system for the water treatment system clarifier. These chemicals were used as coagulants to remove suspended material in the water. Since the clarifier provided no safety function, the new chemical would provide the same function as the previous chemicals, and the new chemical would present no new hazard and would be adequately contained. It was determined that the modification would not constitute an unreviewed safety question.

Change Title

DCP 2210 – Replacement of Gaseous Waste System Oxygen Analyzers

Change

The proposed modification removed and/or replaced various gaseous waste system components, including the oxygen analyzers. The quality assurance category of various gaseous waste system piping and components was also changed from QA Category 1 to QA Category 2. The resulting reclassification was consistent with Regulatory Guide 1.26. New Category 2 analyzers are intended to replace outdated technology that required accurate flow, temperature and pressure constraints. Because the original design, material and construction standards were applied to the new installation, original functions have been maintained, and the new analyzers are more reliable, it was determined that no unreviewed safety question was involved.

Change Title

ECP 00060 – Removal of Chlorine Detection Inputs from Protection System

Change

This change permanently removed chlorine detection inputs that were used to isolate control room ventilation and initiate the bottled air system for the control room. Temporary Modification 1-01-09 was initially used for this purpose. Evaluation of the potential hazard from sodium hypochlorite that replaced the gaseous chlorine was previously performed by a separate 50.59 evaluation. The permanent change was implemented because gaseous chlorine is no longer used at the plant and potential offsite sources did not pose a threat. The result of the safety evaluation for the temporary modification was judged to be acceptable on a permanent basis.

Change Title

TER 6268 – Reclassification of Reactor Makeup and Pressurizer Heater Controls

Change

Reactor makeup and boric acid controls and electrical equipment as well as pressurizer heater controls and electrical equipment have been removed from the list of safety related components (UFSAR Table A.1-1) and the list of systems designed for seismic loading (UFSAR Table B.1-1). Reactor makeup and associated boric acid equipment are used to maintain level in the volume control tank of the chemical and volume control system (CVCS). High head safety injection pumps are the only part of the CVCS required to function for prevention or mitigation of a loss of coolant accident. No accidents require pressurizer heaters to function. Therefore, it was determined that this change was not an unreviewed safety question.

Change Title

TER 10134 – Retirement of Cathodic Protection System for Diesel Generator Fuel Oil Tanks

Change

The emergency diesel generator fuel oil tanks are underground tanks originally provided with a protective coating and a cathodic protection system to guard against corrosion. This TER allowed the cathodic protection system to be retired in place. Although it is expected that the tank's protective coating is adequate to protect it, it was determined that this change was not an unreviewed safety question because potential in-leakage would be detectable by normal surveillance and significant out-leakage prior to detection is unlikely. Therefore, adequate fuel inventory and quality would be maintained if a leak were to develop.

Change Title

Electrical Cable Service Factor and Overload Ratings

Change

With regard to electrical cable ratings, the UFSAR stated that service factors or overload ratings are not infringed on during any mode of operation. Upon discovery of some loading conditions that were inconsistent with this statement, affected equipment was evaluated to ensure that it was capable of performing its intended normal and accident mitigation functions. This safety evaluation was performed to permanently allow these preexisting conditions and the UFSAR was revised accordingly. No unreviewed safety question was involved based on the determination that affected equipment had been evaluated and remained capable of performing its intended functions regardless of cable rating inconsistencies.

Change Title

Revisions to Design Basis Accident Dose Consequence Analyses

Change

As a result of a review of parameters and assumptions used in design basis dose consequence analyses, various corrections were identified. Such changes were determined to result in unreviewed safety questions because the calculated doses would have been increased. The change was submitted to the NRC for prior review. License Amendment 237 was subsequently granted by the NRC to permit the change and the UFSAR was revised accordingly.

Change Title

Revisions to Main Steam Line Break Accident Dose Consequence Analysis

Change

As a result of proposed changes to parameters and assumptions used in the main steam line break dose consequence analysis, calculated doses would have increased. Therefore, the changes were determined to result in an unreviewed safety question. The change was submitted to the NRC for prior review. License Amendment 236 was subsequently granted by the NRC to permit the change and the UFSAR was revised accordingly.

Change Title

Power Range High Neutron Flux Rate Trip Clarification

Change

The UFSAR stated that a power range high neutron flux rate trip was provided for protection against two or more dropped control rods. Since the trip setpoint is a function of negative reactivity insertion, which may differ between rods, it is possible that a single high-worth rod could initiate the trip. Therefore, the UFSAR was revised to clarify the trip description by directly stating the amount of reactivity insertion that would cause the trip. This change did not constitute an unreviewed safety question because a plant modification was not involved. Therefore, the probability or consequences of an accident were not increased and the possibility of a new type of accident was not created.

Change Title

Turbine/Reactor Trip Response Time on High-High Steam Generator Water Level

Change

This change removed the response time specified in the Licensing Requirements Manual for turbine/reactor trip on high-high steam generator water level. It also supplemented the UFSAR accident analysis of excess heat removal due to feedwater system malfunctions. The UFSAR mentioned the trip in the described accident scenario but did not discuss its significance with respect to DNBR. A phrase indicating that the trip is not required to meet DNBR requirements was added. This is because, as shown on UFSAR Figure 14.1-32, DNBR reaches a steady state condition prior to the trip occurring. For the same reason, and because no other accident analyses rely on timeliness of the trip, the trip response time was removed from the Licensing Requirements Manual. These revisions did not constitute unreviewed safety questions because no changes to the plant or procedures were involved and the specified trip response time was not required by existing accident analyses.

Change Title

Changes to Health Physics Monitoring Devices and Practices

Change

This change includes a variety of changes to health physics monitoring devices and practices related to personnel monitoring. Among these are revised descriptions of dosimetry, dosimetry processing & maintenance, and bioassay requirements. The changes did not constitute unreviewed safety questions because they were not related to plant design or operation and there could be no effect on plant design basis accident conditions, assumptions probabilities or consequences.

Change Title

Changes to Steam Generator Tube Rupture Accident Analysis

Change

This change updated the UFSAR description of the steam generator tube rupture accident analysis to incorporate changes to the accident scenario, assumptions, and operator responses that were consistent with current emergency operating procedures. Most of the changes pertained to the timing of milestones in the accident scenario and the quantity of primary coolant that could be transferred to the secondary side of the steam generator. Since the analysis was used to calculate doses, it could have no effect on types or frequencies of accidents or malfunctions but could affect consequences. The change was submitted to the NRC for prior review. License Amendment 237 was subsequently granted by the NRC to permit this change, and the UFSAR was revised accordingly.

Change Title

Revised Core Operating Limits Report for Fuel Cycle 14

Change

This change revised the Core Operating Limits Report to reflect Fuel Cycle 14 core design. Details of these changes are described in letter L-00-029 to the NRC dated March 24, 2000. It was determined that the changes did not involve an unreviewed safety question because the revised core design satisfied existing core design requirements and accident analysis results described in the UFSAR were not adversely affected.

Change Title

Removal of Control Room Chlorine Detector Requirements from the Licensing Requirements Manual

Change

The Licensing Requirements Manual (LRM) contained operability specifications for the control room chlorine monitors. This change deleted these specifications from the LRM because the onsite source of chlorine had been eliminated and off-site sources were not a hazard. Therefore, it was determined that this change did not constitute an unreviewed safety question.

Change Title

Removal of UFSAR List of Stainless Steel Fasteners for the Reactor Coolant System and Reactor Coolant Pressure Boundary

Change

This change removed UFSAR descriptions of the material used for fasteners in various reactor coolant system components. This change was determined to be an unreviewed safety question because it would permit the use of non-stainless steel fasteners that would be susceptible to a new failure mechanism (boric acid corrosion). Therefore the probability of failure could be increased. The change was submitted for prior NRC review. License Amendment 235 was subsequently granted by the NRC to permit the change and the UFSAR was revised accordingly.

Change Title

Removal of Loose Parts Monitoring System Description from the UFSAR

Change

The loose parts monitoring system provides an alarm based on sound originating within the reactor coolant system. This change allowed the description of this system to be removed from the UFSAR. No unreviewed safety question was involved because the system does not function to detect significant abnormal degradation of the reactor coolant pressure boundary and does not serve as an active feature for establishing initial conditions or mitigation of design basis accidents or transients. The system is also independent of all other systems. Therefore, alterations to the system could not increase the probability of accidents or create the potential for a new type of accident.

Change Title

Revision to UFSAR Description of Diesel Generator Fuel Oil Transfer Pump Suction Line Position

Change

Several engineering documents and the UFSAR inconsistently described the separation distance between the bottom of the diesel generator fuel oil storage tank and the lower end of the fuel oil transfer pump suction line. Values between two and six inches were specified. Until such time as it is convenient to visually confirm the correct value, a conservative value of six inches is being assumed. The UFSAR was revised to remove the specific value (2 inches) and now only states that the line is separated from the bottom of the tank to avoid drawing water and that usable tank volume is consistent with technical specifications. No unreviewed safety question was involved because values greater than specified in the UFSAR had less potential to draw water from the tank bottom and because usable tank volume remained greater than the required limit.

Change Title

Revisions to UFSAR Description of Spent Fuel Building Crane Storage Conditions

Change

This change eliminated a commitment in the UFSAR to clamp the spent fuel building platform crane to the east end of the rails (where it is not over the pool) when the crane is not in use. It also removed an incorrect statement that the platform is only operated during fuel handling because it is also used for other activities such as inspections. These statements were replaced by a statement that no suspended loads are permitted over the fuel when the crane is not in use. These changes were determined not to involve an unreviewed safety question because the probability or consequences of a fuel handling accident were not impacted. Storage of the crane above the pool is not a hazard because design basis events such as tornadoes cannot cause it to fall into the pool and no loads will be left suspended from it when not in use.

Change Title

Changes to UFSAR Description of Flood Seal Configurations and Testing Provisions

Change

With respect to protection against natural flooding events, this change updated the UFSAR description of flood seal configurations and testing provisions. The description was revised to remove details of seal design and materials used in specific applications. Instead, typical seal designs and overall design and qualification criteria are discussed or depicted. Depictions of seal test configurations were removed from the UFSAR.

These changes did not involve an unreviewed safety question because the plant was not modified and design requirements were not changed. Description of overall design and qualification criteria rather than specific design or material details for particular applications more directly demonstrates conformance with the design and licensing bases, which were not changed. Although seal test rigs were depicted in the UFSAR and the licensing basis contains provisions for testing and inspection of seals, methods or acceptance criteria were not described. The deleted depictions of the test configurations provide no value in defining or demonstrating compliance with the licensing basis.

Change Title

Temporary Modifications 1-00-01, 1-00-09 and 1-01-07 – Lifted Pressure Switch Leads to Prevent Unintended Trips of Supplementary Leak Collection Fans

Change

On separate occasions, these temporary modifications lifted the leads to two pressure switches that trip the supplementary leak collection system fans on excessive negative pressure in nonsafety related containment purge ductwork. This trip function was disabled to protect against undesirable fan trips while operating in Modes 1 through 4. The trip function is desirable only in Modes 5 or 6. Since the switches' function is to protect ductwork that has no safety function, this temporary modification was determined not to be an unreviewed safety question.

Change Title

Temporary Modifications 1-00-05 and 1-00-06 – Temporary Fire Suppression for BVPS-1 Outage Structures

Change

These modifications provided temporary sprinkler systems for a temporary entry structure beside the BVPS-2 auxiliary building and for trailers on the BVPS-1 turbine deck. The entry structure consisted of a wood frame building and a trailer used as an entry point to the radiologically controlled area during refueling outage periods. The trailers placed on the turbine deck were likewise of combustible construction and content. All of these were of a temporary nature for use during a plant refueling outage. Connections for the sprinklers were made to the BVPS-1 fire protection water supply. Because the sprinkler system was in compliance with NFPA 13, components used were consistent with the design pressure of the water source, and the sprinkler loading was within the capacity of the fire pumps, it was determined that no unreviewed safety question was involved.

Change Title

Temporary Modification 1-00-07 – Temporary Power for Containment Purge and Exhaust Dampers

Change

Because containment purge and exhaust dampers were to be operable during core alterations, and their normal power source was to be deenergized for maintenance, a power source was temporarily provided from the alternate train. This change was judged not to be an unreviewed safety question because these components were not credited with mitigation of an accident and because no new failure modes were created.

Change Title

Temporary Modification 1-00-12 – Temporary Blocking of Cooling Water Supply Valve to Reactor Coolant Pump

Change

Due to a need to repair an air line to its actuator, a cooling water supply isolation valve for a reactor coolant pump was blocked open while the pump was running. Movement of the valve stem was prevented mechanically to ensure cooling flow for a short period while repairs were made. The possibility of a failure resulting in loss of cooling as a result of this modification was considered. It was determined that adequate time would be available to shut down the pump and implement other consequential actions. Closure of the valve is not a safety function. Therefore, the temporary modification was determined not to be an unreviewed safety question.

Change Title

Temporary Modification 1-00-14 – Temporary Installation of a Cover Over the Spent Fuel Pool

Change

Because of roof and ceiling repairs in the spent fuel building, a temporary cover was installed over the pool to serve as a foreign material exclusion boundary. It was determined that the cover could not create any new types of accidents or interfere with the function of other systems in the area such as ventilation. Therefore it was determined that no unreviewed safety question was involved in the temporary installation of the cover for the Spent Fuel Pool.

Change Title

Temporary Modification 1-00-18 – Temporary Chillers Installed in Chilled Water System

Change

This modification installed temporary chillers for the chilled water system to provide summer backup cooling prior to permanent chiller replacement and to supply station needs while the permanent chillers were being replaced. Temporary chiller capacity exceeded existing permanent capacity. The chilled water system serves as a source of cooling for the refueling water storage tank, containment air compressor aftercoolers and containment air recirculation cooling coils. However, it is not the credited source of cooling for this equipment and serves no safety function. Because the temporary equipment satisfied the design, material and construction standards of the permanent equipment, no unreviewed safety question was involved.

Change Title

Temporary Modification 1/2-00-01 – Temporary Sodium Hypochlorite Water Treatment System

Change

In lieu of gaseous chlorine injection, equipment was installed to inject sodium hypochlorite into the circulating water system to control bio-fouling and organic growth. The system consisted mainly of a trailer containing the chemical, a transfer pump and associated tubing that added the chemical directly to the cooling tower basin. The circulating water system serves no safety function and the equipment was sufficiently separated from safety related portions of the plant to preclude adverse effects. Therefore the change was determined not to be an unreviewed safety question.

Change Title

Temporary Modification 1-01-05 – Installation of Scaffolding in the Containment Building

Change

This temporary modification installed scaffolding on the containment operating deck near the steam generators while the plant was in operation. The scaffolding was secured to prevent seismic interactions. In addition to seismic considerations, the potential effect of zinc, and the possibility of interference with the containment depressurization system's ability to cool the containment atmosphere during a postulated DBA were also reviewed. These concerns were found to have no impact on the ability to cope with design basis events. Since the scaffolding did not interfere with plant functions and could not initiate any type of accident, it was determined that this temporary modification did not constitute an unreviewed safety question.

Change Title

Temporary Modification 1-01-09 – Disablement of Control Room Chlorine Detectors

Change

This change disabled chlorine detection inputs that were used to isolate control room ventilation and initiate the bottled air system for the control room. These detectors were used to protect operators in the control room from a gaseous chlorine release. These detectors were disabled because the onsite source of chlorine had been eliminated and off-site sources were not a hazard. Therefore, it was determined that this change did not constitute an unreviewed safety question.

Change Title

Temporary Modification 1-01-13 – Temporary Power to Vital Bus Distribution Panel

Change

This modification provided temporary Class 1E power to a vital bus distribution panel during replacement and testing of its associated inverter. Power was provided by an alternate power source for the vital busses that had been retired in place but could be readily placed back in service. The affected vital bus was declared inoperable during this period but was intended to maintain its availability by use of the temporary modification. Supplied loads were considered operable so long as they received power. This modification was performed in Modes 5 and 6 when technical specifications require only one train to be operable. Because the modification was permitted only while the plant was shutdown in conformance with technical specifications and since no plant operating parameters were affected, it was determined that a license amendment was not required.