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U-602784
4F.190

July 9, 1997

Docket No. 50-461

Mr. A. Bill Beach
Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351

Subject: Clinton Power Station
Circuit Breaker Operability Results

Dear Mr. Beach:

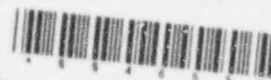
Illinois Power has completed the portions of the low and medium voltage circuit breaker operability assurance plan required to be complete prior to the end of the current refueling outage. This plan was originally detailed to you in Illinois Power letter U-602721 dated June 10, 1997. Successful completion of this plan provides assurance of continued operability of the low and medium voltage circuit breakers at Clinton Power Station (CPS). The results of the implementation of the plan are contained in the attachment to this letter and demonstrate reasonable assurance that the in-service safety-related low and medium voltage circuit breakers are and will continue to be operable through the next operating cycle.

The attachment to this letter contains the following commitments:

- Illinois Power will refurbish all Westinghouse divisional safety-related circuit breakers by the end of the next refueling outage.
- A detailed schedule for the refurbishment of the Westinghouse divisional safety-related circuit breakers will be provided to the resident inspector when it is developed.

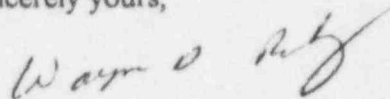
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If you have any questions or comments regarding the implementation of the plan or the results we have achieved please contact me at (217) 935-8881 extension 3400.

Sincerely yours,



Wayne D. Romberg
Assistant Vice President

MRS/krk

Attachments

cc: James L. Caldwell, USNRC, Region III
Geoffrey C. Wright, USNRC, Region III
Mark Ring, USNRC, Region III
Document Control Desk, USNRC
NRC Resident Office, V-690
Dave Zemel, T-31Z

ABB 480 Volt Circuit Breaker Results

Population: 33 safety-related circuit breakers (16 Division I, 17 Division II)

Summary: 29 refurbished, 4 inspected and tested. All in-service circuit breakers operated satisfactorily.

Results of Actions Taken to Determine Assurance of Circuit Breaker Performance

Plan Element

1. Install refurbished circuit breakers in twenty-one of the thirty-three circuit breaker cubicles. Completion of this refurbishment, which started in 1995, will finish the refurbishment of all Division II circuit breakers.

Results

A total of twenty-nine refurbished safety related circuit breakers have been installed in their breaker cubicles. Based on the progress made during the refurbishment and the availability of additional equipment and systems, the scope of this element was increased beyond the original commitment. All Division II circuit breakers have been replaced with refurbished circuit breakers.

Plan Element

2. Test and inspect all safety related circuit breakers that are not replaced with refurbished breakers. This ensures that every ABB breaker has, at a minimum, been tested and inspected prior to start-up from the current outage.

Results

The remaining four Division I safety-related circuit breakers that have not been refurbished have had tests and inspections performed to ensure continued satisfactory performance until they are refurbished in the next operating cycle. All identified discrepancies that would affect the circuit breakers ability to operate were corrected prior to the circuit breaker being placed back into service. The testing performed on these circuit breakers includes: Low voltage functional and timing tests, nominal voltage functional and timing tests, trip device tests, lubrication inspection of critical components, tripper bar load tests, and visual inspection of wiring and hardware.

Plan Element

3. ABB and Nuclear Station Engineering Department (NSED) personnel will inspect and conduct low voltage trip and close testing on fifteen (14 safety related, 1 non-safety related) CPS circuit breakers presently awaiting refurbishment. At least three of those circuit breakers will be disassembled to gather additional data on the as found condition of the circuit breaker. An evaluation of these breakers will be performed by ABB, Duke Engineering and Services, and NSED personnel.

Results

ABB and NSED personnel conducted the low voltage close and trip test on the fifteen circuit breakers that were awaiting refurbishment. Duke Engineering and Services and NSED evaluated the testing and circuit breaker disassembly. This evaluation disclosed that the low voltage operational testing and lubrication inspections are important for determining the operability of the circuit breakers. The evaluation also revealed that the inspection performed on the circuit breakers that have not been refurbished provides confidence in the ability of these circuit breakers to perform their required function. ABB performed the refurbishments of these breakers and provided a written assessment of the condition of each one. ABB agreed that incremental voltage testing of the breakers to close and trip is an excellent way to determine the condition of the lubrication in key parts of the circuit breaker's operating mechanism. This testing was performed on the four circuit breakers that have not been refurbished and was satisfactory.

Plan Element

4. ABB will perform an evaluation and provide a written assessment of the condition of circuit breakers they have refurbished to date.

Results

ABB provided a written assessment of the condition of each of the circuit breakers they refurbished at their Houston facility. This assessment identified the impact of any discrepancies found of the circuit breakers ability to function properly. ABB stated that if the circuit breaker successfully passes the tests and inspections then the material condition of the circuit breaker can be considered satisfactory. ABB defined material condition of the circuit breaker as "the ability of the breaker to charge, close, and trip on command within the operating specifications given in the abbreviated inspection checklist."

Plan Element

5. Duke Engineering and Services personnel will conduct a detailed internal examination of one non-safety-related circuit breaker and provide an evaluation of the condition of that circuit breaker.

Results

This examination by Duke Engineering and Services personnel of the non-safety related circuit breaker revealed that the grease in the circuit breaker had degraded, but was not to the point that it severely inhibited circuit breaker operation. In the opinion of the individual performing the inspection, the successful completion of the tests and inspections on the four circuit breakers not yet refurbished will provide reasonable assurance that the 480-volt ABB circuit breakers will operate for the next 24 months.

Plan Element

6. NSED will evaluate the generic applicability of the data obtained from the refurbishments and inspections conducted, and with input from ABB and Duke Engineering and Services, provide an engineering evaluation of the future operability of the circuit breakers that have not been refurbished.

Results

NSED evaluated the generic applicability of the data obtained from the inspections and refurbishments and input from ABB and Duke Engineering and Services. Based on this information, NSED determined that the four circuit breakers that have not been replaced with refurbished circuit breakers are operable and should continue to be operable until they are refurbished in the next operating cycle.

Conclusion

Twenty-nine of the thirty-three safety related circuit breakers have been replaced with refurbished circuit breakers, including all safety-related circuit breakers in Division II. Based on the results of the tests and inspections on the four remaining circuit breakers, the evaluations of ABB and Duke Engineering and Services, and the evaluation conducted by NSED, it is reasonable to conclude that these four circuit breakers are operable.

General Electric 4160 Volt Circuit Breaker Results

Population: 5 safety-related circuit breakers

Summary: 1 refurbished, 1 operating mechanism refurbished, 3 tested and inspected.
All in-service circuit breakers operated satisfactorily.

Results of Actions Taken to Determine Assurance of Circuit Breaker Performance

Plan Element

1. Install one recently refurbished spare circuit breaker in the MCC main feed cubicle.

Results

One refurbished circuit breaker was installed in the MCC main feed cubicle. Also, one circuit breaker with a refurbished operating mechanism was installed in the cubicle that supplies power to the High Pressure Core Spray pump motor. The necessity to refurbish the operating mechanism was discovered during the inspection and testing of that circuit breaker.

Plan Element

2. Perform a detailed inspection and test of the three remaining circuit breakers. The tests performed included a low voltage close and open test.

Results

The remaining three circuit breakers have had a detailed test and inspection performed. The circuit breakers' as found condition showed that they were in need of preventive maintenance. All identified deficiencies that affect the circuit breakers ability to perform their design function were corrected prior to being placed back into service. At the conclusion of the tests and inspections of the circuit breakers all circuit breakers passed the low voltage functional test and satisfied the manufacturers specifications for opening and closing times at nominal voltage.

Plan Element

3. General Electric and Nuclear Logistics Incorporated (NLI) will review the inspection and test plan and evaluate the adequacy of the plan for determining circuit breaker condition.

Results

Both General Electric and NLI reviewed the inspection and test plan for these circuit breakers. Their evaluation concluded that the plan was comprehensive, and when implemented with satisfactory results, would provide the required level of assurance that the circuit breakers would operate as required until refurbished during the next operating cycle.

Plan Element

4. General Electric and NLI will review inspection and test results and evaluate the condition of the three circuit breakers that were not replaced with refurbished (partially or fully) circuit breakers but were inspected and tested.

Results

Based on the inspection and testing plan being properly implemented and obtaining satisfactory results, it was General Electric's opinion that the circuit breakers could be expected to operate satisfactorily for the next eighteen months. NLI's opinion, based on the review of the data obtained from the tests and inspections, is that the circuit breakers are operable and will remain operable for the next year.

Plan Element

5. NSED will evaluate the generic applicability of the data obtained from the refurbishments and inspections conducted, and with input from NLI and GE, provide an engineering evaluation of the future operability of the circuit breakers that have not been refurbished.

Results

NSED performed an evaluation of the results of the refurbishments and inspections. The results of that evaluation concluded that the circuit breakers that have not yet been refurbished will function properly until they are replaced with refurbished breakers during the first six months of the next operating cycle.

Plan Element

6. Within six months of startup from the current refueling outage replace the four remaining circuit breakers with fully refurbished circuit breakers.

Results

This activity is not yet complete but is on schedule for completion during the six months following startup from the current refueling outage.

Conclusion

Based on the actions taken during the inspection and testing of the 4160-volt circuit breakers, the reviews by General Electric and NLI, and the evaluation conducted by NSED, reasonable assurance exists that these circuit breakers will perform their design function until refurbished.

Westinghouse 4160/6900-volt Circuit Breakers Results

Population: 26 safety-related (includes 4 Model DVP and 22 Model DHP [2 DHPs are spares])

Summary: 1 was refurbished, 16 had detailed inspections and tests conducted (includes 1 not in-service spare), 8 had abbreviated inspections and tests, 1 was a cannibalized spare (not in-service, not refurbished or inspected and tested). All in-service circuit breakers operated satisfactorily.

Results of Actions Taken to Determine Assurance of Circuit Breaker Performance

Plan Element

1. Westinghouse and Duke Engineering and Services will review the inspection and test plan and determine the adequacy of the plan for assessing the condition of the circuit breakers.

Results

Westinghouse personnel reviewed the inspection and test plan. They determined that it was adequate to estimate the overall condition of the lubricant in the circuit breaker. Duke Engineering and Services personnel stated that the inspection and testing plan was "much more than adequate for determining the operability of their Westinghouse DHP breakers."

Plan Element

2. Perform a detailed inspection, using the inspection and test plan, of sixteen circuit breakers (twelve model DHP and four model DVP).

Results

The results of the inspection and test plan showed that all circuit breakers tested operated satisfactorily and were generally in good condition. All as found open and close low voltage functional trip and close timing tests were satisfactory.

Plan Element

3. Perform an abbreviated inspection and test of eight model DHP circuit breakers that do not undergo the detailed inspection and testing plan. This abbreviated inspection includes an inspection for the mechanical condition of the cotter pins and a low voltage trip and close test of circuit breakers. The two circuit breakers that will not be inspected are a spare circuit breaker and a circuit breaker that has been refurbished within the last two years.

Results

The results of these inspections were satisfactory for all circuit breakers tested, including the as-found low voltage trip and close functional/timing tests of the circuit breakers.

Plan Element

4. Westinghouse, Duke Engineering and Services, and NSED will review the inspection and test results obtained from the inspection and test program and evaluate the future operability of the circuit breakers based on this information.

Results

Westinghouse stated that based on the results of the inspection and test plan that there is reasonable assurance that the circuit breakers will perform adequately until they are refurbished provided that they are maintained in accordance with Westinghouse maintenance instructions, IB 32-253-4B. Duke Engineering and Services personnel, who observed the implementation of portions of the inspection and test plan, stated that they have a high level of confidence that the circuit breakers that were inspected will operate as designed. NSED reviewed the results of all the testing and inspections performed and concluded that the data obtained supports continued operability of the circuit breakers until they are refurbished.

Conclusion

Based on information from Westinghouse and Duke Engineering and Services personnel, the results of the inspection and test plan, and the evaluation conducted by NSED, it is reasonable to expect that the installed safety related Westinghouse 4160 and 6900-volt circuit breakers will operate satisfactorily for the next operating cycle. Also, Illinois Power plans to refurbish all of the Westinghouse divisional safety-related circuit breakers by the end of the next refueling outage. These circuit breakers will be refurbished throughout the next operating cycle as refurbished circuit breakers become available and plant conditions allow. The detailed schedule for this activity will be provided to the resident inspector when it is developed.