

DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

May 29, 1981

TELEPHONE: AREA 704
373-4083

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303



Re: Catawba Nuclear Station
Unit 1
Docket Nos. 50-413 and 50-414

Dear Mr. O'Reilly:

Pursuant to 10CFR 50.55e, please find attached Significant Deficiency Report SD 413/81-04.

Very truly yours,

William O. Parker, Jr.
William O. Parker, Jr.

RWO/djs
Attachment

cc: Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC Resident Inspector
Catawba Nuclear Station

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CATAWBA NUCLEAR STATION

REPORT NUMBER: SD 413/81-04

REPORT DATE: May 29, 1981

FACILITY: Catawba Nuclear Station, Unit 1

IDENTIFICATION OF DEFICIENCY:

Several weld leaks were discovered on gas-filled loadcenter transformers 1ETXC and 1ETXE (Westinghouse Serial Numbers WBSN0291 and WBSN0292, respectively). A leak, if unattended, could eventually introduce air into the transformer tank.

INITIAL REPORT:

On May 1, 1981, Mr. Art Johnson of the NRC Region II, Atlanta, Georgia was notified of this deficiency by Mr. W. O. Henry and Mr. W. J. Foley of Duke Power Company, Charlotte, NC 28242.

SUPPLIER AND/OR COMPONENTS:

Westinghouse Electric Corporation, Medium Power Transformer Division, Sharon, Pennsylvania, manufactured these 1500KVA, 4160/600V gas-filled transformers, which are used to supply 600V auxiliary power to equipment used in various Class 1E functions.

DESCRIPTION OF DEFICIENCY:

S/N WBSN0291 (1ETXC)

A low gas pressure indication (approximately 2½ psig) was discovered and a search for leaks was conducted. Three leaks were discovered, all involving seam welds on the radiator.

S/N WBSN0292 (1ETXE)

A bubble test revealed a weld leak on the top plate of the transformer tank.

ANALYSIS OF SAFETY IMPLICATION:

Dielectric Degradation

If a transformer leak were not corrected, the normally maintained positive pressure could be lost. Thermal cycling could eventually cause the replacement of freon by air, resulting in the reduction of the high voltage BIL (Basic Impulse Insulation Level) from 60 to 25 and a reduction of the low voltage BIL from 30 to 10. It should be noted that these reduced BIL levels are standard levels for dry ventilated transformers of the same voltage ratings as the gas-filled transformers in question.

Thermal Degradation

If the transformer leak were not corrected and the freon in the tank were replaced by air, the efficiency of heat transfer from the coils to the tank wall and coolers would be reduced. At full load, failure would not be eminent, but loss expected life could be significant. The manufacturer recommends that, to avoid accelerated aging, the transformer loading, in air, should be restricted to 60% of full load. It should be noted that maximum normal loading for the transformers in question is 67% of full load rating. Loading during the station's construction phase is even less.

Loss of Gas Prevention

Each of the transformers in question is equipped with a pressure gauge and a high/low pressure relay. The low pressure relay is set at positive 2 psig and activates a remote alarm in the event that the pressure is reduced to that level. This alarm should provide warning of a leak sufficiently in advance to allow corrective action prior to the introduction of air into the transformer. During the construction phase of the station, each transformer is inspected monthly, at which time pressure and temperature readings are recorded to confirm the absence of leaks.

SUMMARY:

If left uncorrected, the weld leaks in question would not constitute a threat to the ability of the transformers to perform their Class TE function, although their qualified life may be reduced. However, by periodic (monthly) inspections, and by the application of a low pressure (2 psig) alarm, leaks should be detected and corrected prior to the transformers reaching an accelerated loss-of-life condition. It should also be noted that most leaks occur during an early stage of plant construction, when loading, and subsequent loss of life, is not a factor.

CORRECTIVE ACTION:

All weld leaks in question have been repaired by procedures accepted and approved by Duke Power Co. The transformers have been refilled with freon and monitoring is continued as described above.