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SUBJECT: Final deficiency rept re mismatched capacities between DG
starting air compressors & associated dryers. Initially
reported on 931118. Drive belts & sheaves for compressors &
motors will be reworked/replaced as necessary.

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BLRD-50-438/93-12
BLRD-50-439/93-12

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-438
50-439

**BELLEFONTE NUCLEAR PLANT (BLN) - MISMATCHED CAPACITIES
BETWEEN THE DIESEL GENERATOR STARTING AIR COMPRESSORS AND THE
ASSOCIATED DRYERS - BLRD-50-438/93-12 AND BLRD-50-439/93-12 - FINAL
REPORT**

The subject deficiency was reported to the NRC Operations Center on
November 18, 1993 in accordance with 10CFR50.55(e)(3) as Significant Corrective
Action Report (SCAR) BLP930110SCA. Enclosed is TVA's final report on this subject.

Should there be any questions regarding this information, please telephone Greg Pierce,
BLN Site Licensing Manager, at (205) 574-8058.


H. Fred McCluskey

Enclosures

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11

U.S. Nuclear Regulatory Commission
Page 2

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ENCLOSURE 1

BELLEFONTE NUCLEAR PLANT (BLN) - UNITS 1 AND 2 MISMATCHED CAPACITIES BETWEEN THE DIESEL GENERATOR STARTING AIR COMPRESSORS AND THE ASSOCIATED DRYERS - BLRD-50-438/93-12 AND BLRD-50-439/93-12 - FINAL REPORT

DESCRIPTION OF DEFICIENCY

On or about October 6, 1993 during a design review, a deficiency was identified between the capacities of the diesel generator starting air compressors and their associated dryers as stated on their respective vendor drawings. The starting air compressors, motors, and dryers for Units 1 and 2 were supplied to TVA by Transamerica Delaval, Inc. (TDI) as part of the contract which supplied the diesel generators. TDI has since been purchased by Cooper Enterprise. Many of the components of the system were supplied to TDI by other vendors. The following is a list of components and their respective vendors.

Motors - Allis-Chalmers
Compressors - Ingersoll-Rand
Dryers - Kahn & Co.

A compressor capacity of 83.6 CFM of free air (83.6 SCFM) at the rated speed of 990 rpm is shown on the Ingersoll-Rand drawing provided to TVA by TDI. The dryer has a capacity of 76.1 SCFM stated on the Kahn & Company, Inc.'s drawing which was also provided by TDI. Therefore, the drawings supplied with the equipment show that the capacity of the compressor is higher than that of the dryer. Cooper Enterprise informed TVA that a sheave (pulley) was installed by TDI on the motor that should produce a calculated compressor speed of 910 rpm, resulting in a compressor output of 76.1 SCFM or less, which would not exceed the capacity of the dryer.

Field measurements of the rpm of the Unit 1 compressors indicate that all four Unit 1 compressors are operating at a speed of 1,011 rpm which will produce a volume of air which will exceed the capacity of the dryers. The Unit 2 starting air system compressors have not been operated due to incomplete construction of the system, and therefore no field measurements have been made on Unit 2.

Each dryer assembly has two desiccant towers; the dryer operates on a 10 minute cycle. During the first 5 minutes, tower A dries the incoming air and supplies 6 SCFM of the dry air to tower B for a purge that regenerates the desiccant in tower B. During the last 5 minutes of the cycle, operation is reversed and tower B dries the incoming air and supplies a purge to tower A to regenerate the desiccant in tower A. If the capacity of the dryer is continuously exceeded, it will become ineffective after several cycles because dry air will not be available to regenerate the desiccant. The current compressor/dryer arrangement will not be able to supply air that meets the manufacturer's design requirement of -40°F dewpoint to the air receiver tank.

ENCLOSURE 1 (Continued)

SAFETY IMPLICATIONS

Moisture in the starting air system could adversely affect components which are not designed to operate in the presence of moisture, causing a failure of the diesel generators to start on demand. This could adversely affect the safety of plant operations.

CAUSE

The compressor/dryer arrangement supplied by Transamerica Delaval Inc. is incapable of delivering air to the starting air system at the dewpoint specified on the Kahn & Company, Inc. drawing.

CORRECTIVE ACTIONS

The drive belts and sheaves for the compressors and motors on Units 1 and 2 will be reworked/replaced as necessary so that the compressor output does not exceed the dryer capacity. The compressor drawing will be revised to reflect the rating corresponding to the new drive belt and sheave arrangement. The four Unit 1 air receivers will be examined and deficiencies corrected as necessary. The Unit 2 starting air system has not been operated at BLN and the Unit 2 air receivers are in layup; therefore, no examination will be conducted on the Unit 2 receivers.

These corrective actions will be completed prior to the final system turnover for each unit.

ENCLOSURE 2

BELLEFONTE NUCLEAR PLANT (BLN) - UNITS 1 AND 2 MISMATCHED CAPACITIES BETWEEN THE DIESEL GENERATOR STARTING AIR COMPRESSORS AND THE ASSOCIATED DRYERS - BLRD-50-438/93-12 AND BLRD-50-439/93-12 - FINAL REPORT

COMMITMENTS

These actions will be completed prior to the final system turnover for each unit:

- Rework/replace drive belts and sheaves for the compressors and motors on Units 1 and 2 as necessary.
- Revise the compressor drawing to reflect the rating corresponding to the new drive belt and sheave arrangement.
- Examine and correct the four Unit 1 air receivers as necessary.