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Babcock & Wilcox

APRIL 5, 1979

MR. M. SRINIVASAN, NRC
PHILLIPS BUILDING
WASHINGTON, DC

DEAR MR. SRINIVASAN:

ATTACHED IS DATA CONCERNING OPERATION OF REACTOR COOLANT PUMP MOTORS AT REDUCED SPEED. THIS INFORMATION IS APPLICABLE TO TMI-2, AND WAS DISCUSSED WITH YOU BY B&W PERSONNEL (MESSRS. THORNHILL AND KENNEDY) IN A TELEPHONE CONVERSATION ON APRIL 5, 1979.

VERY TRULY YOURS,

J. H. TAYLOR
MANAGER, LICENSING

CC: R. B. BORSUM

BCC: JE THORNHILL
RK KENNEDY
KE SUHRKE
JD PHINNEY
RE KOSIBA
D MARS

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April 4, 1979
1300 hours

OPERATION OF REACTOR COOLANT PUMP MOTORS AT REDUCED SPEED

Operation at reduced speed can be accomplished by operating at a supply frequency less than 60 hz with a reduced voltage, maintaining the same ratio of operating voltage to rated voltage as the ratio of operating frequency to rated frequency.

Rated load-9000 hp.

Rated frequency-60 hz

Rated voltage-6600 volts

Operating speed-1185 rpm

Rated current-678 amperes

Approximate inrush current-3600 amperes

For half speed operation, the pump load is estimated to be 2300 hp.

Operating frequency-30 hz

Operating voltage-3300 volts

Approximate speed-593 rpm

Approximate current-359 amperes

Approximate inrush current-3140 amperes

For two-thirds speed operation, the pump load is estimated to be 4100 hp.

Operating frequency-40 hz

Operating voltage-4400 volts

Approximate speed-791 rpm

Approximate current-460 amperes

Approximate inrush current-3260 amperes

OPERATION OF REACTOR COOLANT PUMP MOTORS AT REDUCED SPEED
APRIL 4, 1979

The motor is expected to operate satisfactorily at either of the conditions described. For starting, the motor should be started at the frequency selected for operation and with the system voltage prior to closing the breaker within plus or minus 5 percent of the proper operating voltage for the selected frequency. During operation, the voltage should be maintained within plus or minus 15 percent of the proper operating voltage for the frequency selected.

One of the 1/2 hp pumps which supply oil to the backstop must be operating for motor operation at any speed other than nominal 1200 rpm.

A high pressure oil lift pump should be in operation prior to starting.

The oil cooling system is thought to be capable of handling the bearing losses associated with operation of bearing thrust loads corresponding to loop pressure of 900 psi.

Stator temperatures and bearing temperatures should be monitored for evidence of abnormal conditions.

Special precautions should be taken prior to energizing from a new power source to assure proper phase sequence for the correct direction of rotation to avoid unnecessary additional forces on the backstop in combination with any hydraulic forces which exist.