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June 18, 2012

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

Subject: Duke Energy Carolinas, LLC  
Oconee Nuclear Station Units 1, 2, 3  
Docket Nos. 50-269, -270, -287  
Fifth Ten-Year Inservice Test Program Interval  
Pump Specific Relief Request No. ON-SRP-HPI-03

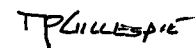
Pursuant to 10 CFR 50.55a(f)(5)(iii) and 10 CFR 50.4, Oconee Nuclear Station (ONS) hereby request Nuclear Regulatory Commission (NRC) approval of the following Code relief for the fifth ten-year interval inservice test program.

The relief requested is from certain requirements for vibration monitoring specified by the American Society of Mechanical Engineers (ASME) Operational and Maintenance Code 2004 Edition, 2005 and 2006 Addenda. This request is to allow Duke Energy Carolinas, LLC (Duke Energy) to take exception to vibration monitoring requirements for the upper motor bearing housing on the High Pressure Injection pumps for all three ONS units on the basis of impracticality. Details of the determination of impracticality are provided in the enclosed 10CFR50.55a request.

This submittal document contains no regulatory commitments.

If there are any questions or further information is needed, you may contact Corey Gray at (864) 873-6325.

Sincerely,

  
T. Preston Gillespie Jr.,  
Site Vice President

Enclosure: Pump Specific Relief Request 10 CFR 50.55a Request Number: ON-SRP-HPI-03

A047  
NRC

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Enclosure

Pump Specific Relief Request  
10 CFR 50.55a Request Number: ON-SRP-HPI-03

**Pump Specific Relief Request**

10 CFR 50.55a Request Number: ON-SRP-HPI-03

Relief Requested  
In Accordance with 10 CFR 50.55a(f)(5)(iii)

-----Inservice Testing Impracticality-----

1. ASME Code Component(s) Affected

1HPIPU0001, 1HPIPU0002, 1HPIPU0003  
2HPIPU0001, 2HPIPU0002, 2HPIPU0003  
3HPIPU0001, 3HPIPU0002, 3HPIPU0003

2. Applicable Code Edition and Addenda

ASME Operational and Maintenance Code (OM) 2004 Edition, 2005 and 2006 Addenda

3. Applicable Code Requirement

Per OMb-2006 Subsection ISTB 3540 b, vibration measurements shall be taken on the upper motor bearing housing in three approximately orthogonal directions, one of which is the axial direction for vertical line shaft pumps.

4. Impracticality of Compliance

The OM Code required vibration measurements on the upper motor bearing housing for the subject pumps are impractical on the basis of inaccessibility due to location and design features of the motor. Plant design does not include permanent scaffolding or ladders which provide access to the top of the motors for the subject pumps. Also, the upper motor bearing housing is contained within a cone shaped fiberglass protective shroud which obstructs access to the bearing housing and prevents performance of the axial vibration measurement (See attached drawing OM-0314-0063 for details). In order to perform the required measurements, the component would need to be redesigned to eliminate the shroud or the shroud would have to be removed for each test. Both of these options are impractical. In addition, removal of the shroud during pump operation to provide direct access to the bearing housing would create an additional equipment concern due to the potential for foreign material intrusion and component damage. Vibration measurements taken on the fiberglass shroud would not provide useful or meaningful information.

5. Burden Caused by Compliance

To facilitate compliance with the Code testing requirement, the plant would need to be modified to provide a permanent ladder and platform for access to the bearing on each of nine motors. Also each pump/motor assembly would have to be redesigned to remove the bearing shroud during pump operation. Since this would subject the component to potential damage by foreign material intrusion, the pump/motor redesign

would have to provide protection from foreign material intrusion while still allowing access. These modifications are impractical and create unnecessary burden.

6. Proposed Alternative and Basis for Use

The HPI pumps are considered Group A, vertical line shaft pumps. Quarterly vibration readings are taken at two locations on the motor and two locations on the pump. Locations on the motor are at the inboard bearing and approximately midway on the motor housing. Locations on the pump are the pump inboard bearing and on the pump stand. At each location, vibration measurements are recorded in two approximately orthogonal directions perpendicular to the rotating shaft. These locations have been chosen for monitoring in an effort to identify specific failure modes and have proven to provide early indication of abnormal pump / motor performance. Monitoring of the pump / motor vibrations at these locations will ensure the health of the pump is sufficiently examined. It is worth noting that the OM Code imposes more stringent hydraulic acceptance criteria on these pumps than for horizontal centrifugal or positive displacement pumps. This more stringent hydraulic acceptance criteria places more emphasis on detection of degradation through hydraulic test data than through mechanical test data.

Application of the OM hydraulic testing criteria along with radial vibration monitoring in the areas described above will provide adequate data for assessing the condition of the subject pumps and for monitoring degradation. Therefore, reasonable assurance of operational readiness for these pumps will be maintained.

7. Duration of Proposed Alternative

This proposed test alternative will be imposed for the duration of the Fifth 120 month interval (which begins July 1, 2012).

8. Precedents

Specific relief has been granted from the code vibration requirements where the upper motor bearing housing is inaccessible (Oconee Safety Evaluation dated March 28, 2011, Docket numbers 50-269, 50-270, 50-287, TAC numbers ME3840, ME3841, ME3842, ME5790, ME5791, ME5792). (Hatch Safety Evaluation dated June 13, 1994, Docket numbers 50-321 and 50-366, TAC numbers M59202, M59203, M83192, M83193).

NOTES:

- BOTH BRG. T.C. PER HONEYWELL CAT.#G100, BASIC ORDER NO.3021A-3, HOLE DEPTH 15.5 FOR UPPER T.C., 14.5 HOLE DEPTH FOR LOWER T.C. PLUS ADD CU. GROUND WIRE WELDED TO HOT JUNCTION.
- UPPER BRG IS A WAUKESHA 10.5 THRUST BRG. PER WESTINGHOUSE'S #286C286001
- EXPANDED METAL SCREENS ON BRACKETS AND FRAME OPENINGS.
- ALL COND. BOXES ASSEMBLED FOR TOP ENTRY.
- TWO GPM OF WATER @ MAX INLET TEMP. OF 33°C AND MAX OUTLET TEMP. OF 47°C OR FOUR GPM OF WATER @ INLET TEMP. OF 38°C REQUIRED TO COOL TOP BEARING. WATER MUST BE CLEAN AND FREE OF SEDIMENT.

- APPROX. WT. OF MOTOR 5950 LBS.
- SMALL AUX. COND BOX IS FOR 115 VOLT, 1.91 AMPS, 200 WATT SPACE HEATER LEADS
- ROTOR CORE INFORMATION  
ROTOR LENGTH=14.00 ROTOR DIA.=15.300  
ROTOR WT.=APPROX. 1000 LBS.
- HPI MOTOR SHAFT EXTENSION MAY BE MACHINED AS MUCH AS .024" BELOW THE ORIGINAL 2.124" MINIMUM DIAMETER TOLERANCE WITHOUT AFFECTING THE SHAFT STRENGTH. MOTOR HALF COUPLINGS ARE PURCHASED UN-BORED AND ARE CUSTOM FIT TO INDIVIDUAL SHAFTS. DOCUMENTATION OF INDIVIDUAL MOTOR SHAFT SIZES IS NOT REQUIRED UNLESS MACHINED LESS THAN 2.100" DIAMETER. SEE OM 314-0120 001, SUPPLEMENTAL INFORMATION TO WESTINGHOUSE INSTRUCTION BOOK I.L. 3830-3, FOR ADDITIONAL DETAILS. THIS NOTE DOCUMENTS THE FOLLOWING SHAFT MACHINE: SHAFT #CH-11701-1 MACHINED FROM 2.125" TO 2.115" PER NSM-1725, SHAFT #68F20001-5 MACHINED FROM 2.125" TO NO LESS THAN 2.100".
- SCREWS FOR MOTOR LEAD BOX SHALL BE REPLACED WITH NON QAI CARBON STEEL THUMBSCREWS.

- ALTERNATE MOTOR TO MOTOR-STAND BOLTING CONFIGURATION FOR ALL HPI MOTORS, EXCEPT FOR 28-HPI WHICH WILL REQUIRE (12) BOLTS DUE TO VIBRATION. EIGHT (8) ADDITIONAL HOLES MAY BE DRILLED 20" ON EACH SIDE OF EXISTING FOUR (4) HOLES TO IMPROVE STIFFNESS AND REDUCE MOTOR VIBRATION. EVALUATION FOR ADDITIONAL BOLTING PERFORMED PER ONCE-8167.
- OPTIONAL THERMOCOUPLER INSTALLATION FOR HPI MOTORS. THERMOCOUPLES ARE USED TO MONITOR INLET AND OUTLET COOLING WATER TEMPERATURE FOR UPPER BEARING OIL COOLER. SEE OM 314-0120 001, SUPPLEMENTAL INFORMATION TO WESTINGHOUSE INSTRUCTION BOOK I.L. 3830-3, FOR ADDITIONAL DETAILS.
- ELASTIMOLD BUSHINGS SHALL BE INSTALLED BY WELDING OR BOLTING. FOR THE WELDED CONNECTION, REFER TO OM 314.-0099 001 FOR THE APPROPRIATE WELDING GUIDELINES. FOR THE BOLTED CONNECTION, DRILL (4) 1/2" + 1/2" DIAMETER HOLES IN THE BUSHING FLANGE AND THE SUPPORT BRACKET, ON A 2 3/4" BOLT CIRCLE, 90 DEGREES APART, BETWEEN THE FLANGE BAIL TABS. USE THE FOLLOWING PARTS TO INSTALL EACH ELASTIMOLD BUSHING:  
(4) 1/2" DR# 18, 32 UNF-3A, ALLOY STEEL ASTM A575 CAP HEX SOCKET SCREW OR EQUIVALENT  
(4) 1/2" UNF-2B CARBON STEEL NUTS OR EQUIVALENT  
(4) 1/8" REGULAR HELICAL CARBON STEEL LOCK WASHERS OR EQUIVALENT

DWG. 2748D55

1 X 3 X 5

MAIN CONDUIT BOX SUPPLIED UNDRILLED - TO BE DRILLED BY CUSTOMER.

(3) ELASTIMOLD BUSHINGS  
K180C4 OR # 180-C4  
(200 AMP)  
SEE NOTE 13

VIEW LOOKING DOWN ON  
TOP OF MOTOR

ELASTIMOLD ELBOW RECEPTACLE 151LR OR 154LR OR 156LR SERIES TO BE SUPPLIED BY CUSTOMER. ELASTIMOLD 151LR CONNECTORS ARE TO BE TAPED TO CABLE TO PREVENT LOOSENING; 154LR AND 156LR CONNECTORS DO NOT REQUIRE TAPING (REF. PIP 02-2972).

BRG. T.C. SUPPLIED WITH 5/8"-14 NPT COND. OUTLET.  
DETAIL OF BRG. T.C. TERM BLOCKS  
GROUND

AUX. BOX SUPPLIED WITH A HOLE FOR 1.5 COND. & KNOCKOUTS FOR 2.0, 2.5 & 3.0 CONDUITS. (SEE DIAGRAM "A" FOR TERM. BD. SCHEMATIC)  
AUX. BOX SUPPLIED WITH A HOLE FOR .75 COND. & A KNOCKOUT FOR .75 COND. (SEE DIAGRAM "B" FOR TERM. BOARD SCHEMATIC)

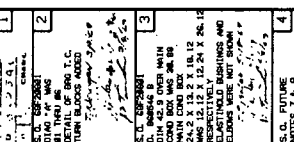
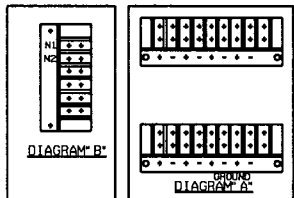
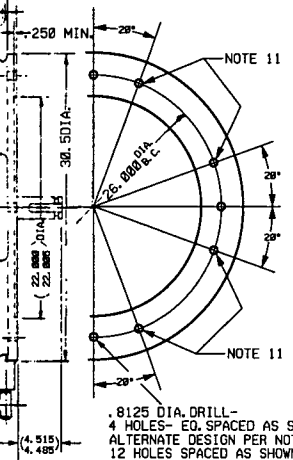
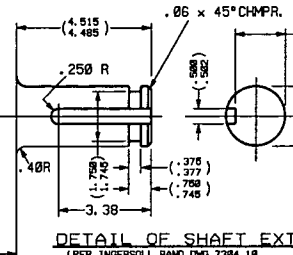
NOTES:  
14. T/C JUNCTION BOX LOCATION IS APPROXIMATE AND MAY BE RELOCATED WITHIN 4" - 6" FROM CURRENT LOCATION TO AVOID INTERFERENCE. DRILL AND TAP BOX MOUNTING THROUGH HOLES 1/4-20 PER EXISTING BOX. DRILL AND TAP 10-24 HOLES AS NEEDED FOR RELOCATING T/C CABLE CLAMPS. TIGHTEN PER GOOD MAINTENANCE PRACTICES. CLAMP SCREWS ARE 10-24 BY 1/2, BOX SCREWS ARE 1/4-20 BY 1.25. USE BOLTS/SCREWS AS NEEDED TO PLUG ABANDONED HOLES.

STATUS	NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	INSPECTED
	D9	EC100823	FMW	6-22	EHM	6-22	PB	6-23	-W- CWC -W-
	D8	OE-17911	FMW	10-29	CWC	10-29	GDC	10-29	W EJV W
	A 07	OE-17717	JHA	9-23	MLM	9-24	GDC	9-25	W EJV W
	D6	REV. PER OE-12970	RLS	7/11/00	LER	7-11-00	RLB	7-12-00	RCL JAK HEH
	D5	REV. PER OE-12985	AES	11-19-98	MSI	11-19-98	RLB	11-20-98	-W- JAK JBB
	D4	REV PER EDITORIAL EXEMPT. 03	DCM	6-24	NAS	6-24	SOC	6-27	-W- JAK JBB
	D3	OE-8167	DMG	6-25	NAS	6-25	RLB	6-27	LML JDB JBB
	D2	OE-4439	WAB	10-11	MDH	10-13	TMB	10-20	WAIVED WAIVED WAIVED
	D1	NSM BN-1725	DSS	3-29	JPV	3-31	JLC	4-9	WAIVED WAIVED WAIVED

QA CONDITION 1  
OM 314.-0063 001

WESTINGHOUSE ELECTRIC CORPORATION  
MOTOR LAC FRAME#688.5P30 YSS DP CSP  
OUTLINE (SPEC DUKE POWER CO.)

2748D55



ERN:OX0015VD