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AUTH.NAME AUTHOR AFFILIATION
MORGAN,R.E. Carolina Power & Light Co.
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SUBJECT: Special rept: on 881004, steam driven auxiliary feedwater pump
inoperable for approx 106 h.

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
30-DAY SPECIAL REPORT - STEAM DRIVEN AUXILIARY FEEDWATER PUMP INOPERABLE

In accordance with Plant Technical Specifications 3.4.4.a, the following event is reported. This specification requires that a special report be submitted if one of the three Auxiliary Feedwater (AFW) pumps is inoperable for greater than 72 hours.

Event

On October 4, 1988, at 1130 hours, while performing Operations surveillance test OST-202, Steam Driven Auxiliary Feedwater System Component Test, the Steam Driven Auxiliary Feedwater (SDAFW) Pump was declared inoperable due to pump vibrations exceeding the acceptance criteria of the test.

Although an investigation of increased vibration was already in progress based on previous OST results, a more focused effort began when the pump vibration increased to a level that required it to be declared inoperable. This effort to determine the cause of the increased vibration and its affect on pump operation led to further pump testing, valve maintenance, piping hanger inspections, and pump manufacturer involvement. This additional effort resulted in the SDAFW pump being out of service for a total of approximately 106 hours.

The investigation into possible causes of the increased vibration included evaluation of pump support movement, pipe movement, hydraulic forces, and disassembly and inspection of the SDAFW pump recirculation line check valve. This investigation revealed no apparent cause(s) for the increased vibration, but did reveal that the frequencies of the vibrations were below any frequency that could be attributed to the rotation of the pump shaft.

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The vibration instrument manufacturer was contacted and recommended the use of a magnetic type probe rather than the standard hand held contact probe currently being used. Although the hand held probe is appropriate for the measurement, it has the potential to introduce error in the reading at the higher frequencies as a result of the high machine speed. Subsequent pump testing with the magnetic probe resulted in the measured vibration levels being noticeably lower, in some cases 80% lower.

OST-202 was again performed on October 6, 1988 at 2225 hours to assess pump performance after all systems were restored to normal (check valve, pipe hangers, etc.). The vibration instrument used was equipped with a magnetic probe. The data recorded was analyzed and evaluated with the following conclusions:

The level of vibrations and the frequencies at which they occur, as measured during this OST, are not detrimental to the pump. The displacement vibrations are at such a low magnitude for their frequencies that they could not be damaging to the pump. The displacement and velocity vibrations are within the pump manufacturer's recommended acceptable limit.

Although the source of the increased vibration is not known at this time, it is suspected that vibration is being induced from an external source, such as equipment operating in the immediate vicinity of the SDAFW pump. This is based on the fact that a background vibration can be read with the SDAFW pump shutdown.

The source of the increased vibration is still under investigation. Additionally, the surveillance test data will continue to be trended for early detection of a problem that may affect the operability of the SDAFW pump.

On October 8, 1988, at 2115 hours, the SDAFW Pump was declared back in service.

Should you have any question, please contact Mr. J. M. Curley, (803) 383-1367.

Very truly yours,



R. E. Morgan
General Manager
H. B. Robinson S. E. Plant

FLL:bah

Enclosure

cc: Regional Administrator, NRC Region II
Mr. L. W. Garner
INPO