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From:	FusionP8NoReplyNProd@duke-energy.com	50 -
Sent:	Wednesday, June 1, 2022 8:33 AM	50 -
То:	Auten, Rhoda J	50
Subject:	[Fusion P8] TR-NUC-CN-014344 - Transmittal External Distribution	

Transmittal External Distribution Notification TR-NUC-CN-014344 - SLC Manual Revision to LOES and SLC 16.7-5

You're receiving this message because you're the Responsible Internal User for **(CNS) U S NUC REG WASHINGTON DC** external recipient with the following distribution:

- LICN CN CNS-SLC-16.7-5 005 ISSUED (Turbine Overspeed Protection)
- LICN CN CNS-SLC-LOES 107 ISSUED (List of Effective Sections)
- <u>LICN CN SLC Letter to Manual Holders 107 ISSUED</u> (SELECTED LICENSE COMMITMENTS MANUAL HOLDERS LETTER (REV 107))

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Remove and Insert

Replace the following page(s) of Catawba Nuclear Station Selected Licensee Commitments (SLC) Manual with the attached revised page(s). The revised page(s) are identified by Section number and contains marginal lines indicating the areas of change.

REMOVE THESE PAGES

INSERT THESE PAGES

LIST OF EFFECTIVE SECTIONS

Pages 1-5 Revision 106 Pages 1-5 Revision 107

TAB 16.7

16.7-5, Pages 1-6 Revision 6

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16.7-5, Pages 1-6 Revision 7

If you have any questions concerning the contents of this Catawba Nuclear Station Selected Licensee Commitments (SLC) Manual update, please contact Nicole Edwards (704)382-6669.

16.7 INSTRUMENTATION

16.7-5 Turbine Overspeed Protection

COMMITMENT Turbine Overspeed Protection System shall be FUNCTIONAL.

APPLICABILITY: MODES 1, 2, and 3.

REMEDIAL ACTIONS

CONDITION			REQUIRED ACTION	COMPLETION TIME
A.	One stop valve or one control valve per high pressure turbine steam	A.1	Restore non-functional valve(s) to FUNCTIONAL status.	72 hours
	line non-iuncional.	<u> </u>		
		A.2	Close at least one valve in affected steam line(s).	78 hours
		<u>OR</u>		
		A.3	Isolate the turbine from the steam supply.	78 hours
В.	One intermediate stop valve or one intercept valve per low pressure	B.1	Restore non-functional valve(s) to FUNCTIONAL status.	72 hours
	functional.	<u> 0</u>		
		B.2	Close at least one valve in affected steam line(s).	78 hours
		OR		
		B.3	Isolate the turbine from the steam supply.	78 hours

(continued)

REMEDIAL ACTIONS (continued)

CONDITION			REQUIRED ACTION	COMPLETION TIME
C.	Electrical or Mechanical Overspeed Protection Non-Functional	C.1 <u>OR</u>	Determine missile probability P1 value and perform required actions as determined by the probability criteria table located in the bases.	6 days
		C.2	Isolate the turbine from the steam supply.	150 hours
D.	Turbine Overspeed Protection System non- functional for reasons other than Condition A, B or C.	D.1	Isolate the turbine from the steam supply.	6 hours

TESTING REQUIREMENTS

	TEST	FREQUENCY
TR 16.7-5-1	 NOTES	In accordance with SLC 16.7-5 Bases
TR 16.7-5-2	Perform CHANNEL CALIBRATION.	18 months
		(continued)

	TEST	FREQUENCY
TR 16.7-5-3	Disassemble at least one each of the four high pressure turbine stop valves, six low pressure turbine intermediate stop valves, six low pressure turbine intercept valves, and four high pressure turbine control valves, and perform a visual and surface inspection of valve seats, disks, and stems, and verify no unacceptable flaws or corrosion.	54 months
TR 16.7-5-4	Perform mechanical trip testing.	In accordance with SLC 16.7-5 Bases
TR 16.7-5-5	Perform electrical trip testing.	In accordance with SLC 16.7-5 Bases

BASES This COMMITMENT is provided to ensure that the Turbine Overspeed Protection instrumentation and the turbine speed control valves are FUNCTIONAL and will protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could impact and damage safety related components, equipment, or structures.

> The term "Isolate the turbine from the steam supply" used in Required Actions A.3, B.3, C.2 and D.1 can be met in several ways. These include: Maintaining the turbine in a tripped condition; or Hydraulically gagging all four main stop valves closed; or Hydraulically gagging all four main control valves closed; or Closing the main steam isolation valves and main steam isolation valve bypass valves.

> Calculation CNC 1200.00-00-0006 provides qualitative and quantitative assessment for interval extension on Turbine Valve Movement Testing (TVMT). The calculation concludes that it is allowable to have a maximum 18-month TVMT interval for HP Stop Valves, HP Control Valves and LP Combined Intermediate Valves, based on main turbine missile probabilities. It is desired to incrementally extend the current test frequency from 4 months to 18 months based on two successful tests at each extended test interval no greater than half the previous test interval (e.g. the 4-month frequency would be extended to 6-months; the 6-month interval would be extended to 9 months and the 9 month frequency to 12 months, the 12 month frequency to 15 months and finally the 15 month interval to 18 months). The other recommendation is that CNS trend EHC fluid quality measurements to ensure fluid quality remains within acceptable limits. CNS currently takes Monthly samples and verifies EHC fluid is within OEM recommended limits (PMRQs 02031192-02 and

Catawba Units 1 and 2

BASES (continued)

02031193-02). Both CNS units start at a 4M frequency for all Turbine Valve Movement Testing, within OEM acceptable limits. Extending TVMT frequencies through calculation CNC 1200.00-00-0006, the TVMT PM strategy is to extend valve testing out in 3 month increments after a minimum of 2 iterations. These TVMT intervals may be increased until the frequency reaches a maximum of 18 months between TVMT tests. The testing frequencies will be extended in accordance with the strategy given below until the maximum frequency is reached.

- 4M to 6M Allow for testing at this interval and collect data (a minimum of 2 Turbine Valve Movement Tests at this frequency)
- 6M to 9M Allow for testing at this interval and collect data (a minimum of 2 Turbine Valve Movement Tests at this frequency)
- 9M to 12M Allow for testing at this interval and collect data (a minimum of 2 Turbine Valve Movement Tests at this frequency)
- 12M to 15M Allow for testing at this interval and collect data (a minimum of 2 Turbine Valve Movement Tests at this frequency)
- 15M to 18M Allow for testing at this interval and collect data (a minimum of 2 Turbine Valve Movement Tests at this frequency)

PMRQs that document current frequency and drive execution:

- 02031173-01 -- PT/1/A/4250/02B MAIN TURB VALVE MOV'T TEST
- 02031173-02 PT/1/A/4250/02C TURBINE CONTROL VALVE MOV'T TEST
- 02031172-03 PT/2/A/4250/02B MAIN TURB VALVE MOVEMENT TEST
- 02031172-04 PT/2/A/4250/02C TURBINE CONTROL VALVE MOVEMENT TEST

Calculation CNC 1200.00-00-0006 also performed analysis on extending out mechanical and electrical (backup) trip testing, based on turbine missile probabilities. The calculation concludes that a maximum frequency of 2-Months on mechanical trip testing and 1-Month for electrical trip testing is allowable. The maximum extensions for trip testing are based on requirements that CNS extends the interval out in steps and no more than double of the previous test interval. The other recommendation is that CNS trend EHC fluid quality measurements to ensure fluid quality remains within acceptable limits. Extending trip test frequencies through calculation CNC 1200.00-0006, the Turbine Trip test PM strategy is to extend trip testing out no more than double of the previous test interval after a minimum of 2 iterations. The testing frequencies will be extended in accordance with the strategy given below until the maximum frequency is reached.

1W to 2W – Allow for testing at this interval and collect data (a minimum of 2 Turbine Trip Tests at this frequency)

- 2W to 1M Allow for testing at this interval and collect data (a minimum of 2 Turbine Trip Tests at this frequency)
- 1M to 2M This would only be optional for the mechanical trip testing upon a minimum of 2 successful mechanical trip tests.

Catawba Units 1 and 2

BASES (continued)

PMRQs that document current frequency and drive execution: 02031173-04 – PT/1/B/4250/02A MAIN TURBINE WEEKLY TRIP TEST 02031172-01 – PT/2/B/4250/02A MAIN TURBINE WEEKLY TRIP TEST

NUREG 0800 3.5.1.3 documents the NRC's review with regard to turbine missile generation and concluded that the probability of unacceptable damage to safety related systems and components resulting from missile damage is acceptably low (i.e less than 10⁻⁷ per year) provided the total turbine missile generation probability (P1) is maintained below 10⁻⁴ per reactor year. The application of NUREG 0800 Section 3.5.1.3 Table 3.5.1.3-1 for favorably oriented turbines provides additional NRC approved P1 values and recommended licensee actions if the turbine is online.

Calculation CNC 1200.00-00-0006 contains missile generation probability (P1) values for different scenarios that can be used to determine the resulting missile probability (P1) for a given condition to be used in conjunction with the Probability Criteria Table to determine the required action. Any change in system or component reliability will require use of the same methodology used in CNC-1200.00-0006 to determine any new P1 value to ensure missile probabilities do not exceed NUREG 0800 Section 3.5.1.3 Table 3.5.1.3-1 criteria.

The turbine trip test requirement in TR 16.7-5-4 and TR 16.7-5-5 can be temporarily extended if the execution of the test creates unacceptable risk during execution. The effect of the probability (P1) must be evaluated prior to the temporary frequency extension to ensure the P1 value remains below the high value for Probability Criteria in Case B.

Probability Criteria			
Case	Annual Probability	Required Actions	
A	P1 < 10 ⁻⁴	This condition represents the general, minimum reliability requirement for loading the turbine and bringing the system online	
В	10 ⁻⁴ < P1 < 10 ⁻³	If this condition is reached during operation, the turbine may be kept in service until the next scheduled outage, at which time the licensee must take action to reduce P1 to meet the Case A criterion before returning the turbine to service	
С	10 ⁻³ < P1 < 10 ⁻²	If this condition is reached during operation, the turbine must be isolated from the steam supply within 60 days, at which time the licensee must take action to reduce P1 to meet the Case A criterion before returning the turbine to service.	

Both mechanical and electrical trips non-functional requires entry into Condition D.

Catawba Units 1 and 2

D $10^{-2} < P1$ If this condition is reached during operation, the turbine must be isolated from the steam supply with 6 days, at which time the licensee must take action reduce P1 to meet the Case A criterion before
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REFERENCES 1. CNC 1200.00-00-0006 – Catawba Turbine Overspeed Protection System Maintenance and Test Interval Extension Assessment.

- 2. CNM 1200.00-0212.001 Turbine Instruction Manual.
- 3. NUREG 0800 3.5.1.3 Turbine Missiles Revision 3 March 2007.

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