Duke Power
A Duke Energy Company

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September 12, 2000

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTENTION: Document Control Desk

SUBJECT: Duke Energy Corporation
Catawba Nuclear Station Unit (s) 1 and 2
Docket Numbers 50-413 and 50-414
Proposed Amendment to the Facility
Operating Licenses Concerning Steam Generator
Tube Rupture Licensing Basis
(TAC Nos. 8499 and 8500)

By letter dated March 1, 2000, Duke Energy Corporation requested an amendment to the Catawba Nuclear Station Facility Operating Licenses (FOL), in part, to revise the licensing basis Steam Generator Tube Rupture sequences. Attached please find an attachment detailing the Steam Generator Tube Rupture accident cut sets from the Probabilistic Risk Assessment that support the risk analysis portion of the License Amendment Request.

There are no commitments contained in this correspondence.

Inquiries on this matter should be directed to M.H. Chernoff at (803) 831-3414.

Very truly yours,

G.R. Peterson

Attachments

A001

xc w/attachments:

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Catawba PRA Revision 2b SGTR Cut Sets Greater Than 1E-09

#	Inputs	Description	Rate	Exposure	Event Prob	Probability
1	Y	SGTR		1.2E-02	1.2E-02	5.6E-09
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
	RNCBLKVDHE	Operators Fail to Recognize and Close Block Valve		6.0E-03	6.0E-03	
	TRECIRCDHE	Operators Fail to Establish High Pressure Recirculation		4.5E-03	4.5E-03	
2	Y	SGTR		1.2E-02	1.2E-02	3.3E-09
	RNC031BMVC	Motor Operated Valve 1NC31B Fails to Close	3.5E-03	1.0E+00	3.5E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
	TRECIRCDHE	Operators Fail to Establish High Pressure Recirculation		4.5E-03	4.5E-03	
3	Y	SGTR		1.2E-02	1.2E-02	2.9E-09
	EKSK501COM	Common Cause Failure of Master Relays K501A and K501B		1.9E-05	1.9E-05	
	FCA0TDPTPR	Turbine Driven Pump Fails to Run	3.6E-03	2.4E+01	8.6E-02	
	EKSFAS0DHE	Operators Fail To Respond to ESFAS Relay Failure		1.5E-01	1.5E-01	
4	Y	SGTR		1.2E-02	1.2E-02	2.0E-09
	FCA0TDPTPR	Turbine Driven Pump Fails to Run	3.6E-03	2.4E+01	8.6E-02	
	KKC0RUNCOM	Common Cause Failure of KC Pumps to Run		2.0E-06	2.0E-06	
5	Y	SGTR		1.2E-02	1.2E-02	1.9E-09
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
	TRECIRCDHE	Operators Fail to Establish High Pressure Recirculation		4.5E-03	4.5E-03	
6	Y	SGTR		1.2E-02	1.2E-02	1.9E-09
	FCA0TDPTPR	Turbine Driven Pump Fails to Run	3.6E-03	2.4E+01	8.6E-02	
	WRNABPRCOM	Common Cause Failure of RN Pump to Run		1.9E-06	1.9E-06	
7	Y	SGTR		1.2E-02	1.2E-02	1.5E-09
	HND028AMVO	Motor Operated Valve 1ND28A Fails to Open	3.5E-03	1.0E+00	3.5E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
8	Y	SGTR		1.2E-02	1.2E-02	1.5E-09
	INI115AMVC	Motor Operated Valve 1NI115A Fails to Close	3.5E-03	1.0E+00	3.5E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
9	Y	SGTR		1.2E-02	1.2E-02	1.5E-09
	INI144AMVC	Motor Operated Valve 1NI144A Fails to Close	3.5E-03	1.0E+00	3.5E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	

Catawba PRA Revision 2b SGTR Cut Sets Greater Than 1E-09

#	Inputs	Description	Rate	Exposure	Event Prob	Probability
10	Y	SGTR		1.2E-02	1.2E-02	1.5E-09
	LKC056AMVO	Motor Operated Valve 1KC56A to ND Hx 1A Fails to Open	3.5E-03	1.0E+00	3.5E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
11	Y	SGTR		1.2E-02	1.2E-02	1.5E-09
	LND025AMVO	Motor Operated Valve 1ND25A Fails to Open	3.5E-03	1.0E+00	3.5E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
12	Y	SGTR		1.2E-02	1.2E-02	1.5E-09
	LNI185AMVO	Motor Operated Valve 1NI185A Fails to Open	3.5E-03	1.0E+00	3.5E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
13	Y	SGTR		1.2E-02	1.2E-02	1.3E-09
	FCA0TDPTPR	Turbine Driven Pump Fails to Run	3.6E-03	2.4E+01	8.6E-02	
	KKC001BTRM	KC Train 1B in Maintenance		2.0E-02	2.0E-02	
	KRN0291AVT	Air Operated Valve 1RN291 Transfers Position	2.7E-06	2.4E+01	6.5E-05	
14	Y	SGTR		1.2E-02	1.2E-02	1.3E-09
	LKC057AAVT	Air Operated Vlv 1KC57A Transfers Position	2.7E-06	1.1E+03	3.1E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
15	Y	SGTR		1.2E-02	1.2E-02	1.3E-09
	KKC01A2LHE	Latent Human Error Fails KC 1A2 Pump Train		3.0E-03	3.0E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
16	Y	SGTR		1.2E-02	1.2E-02	1.3E-09
	LNDTR1ALHE	Train 1A Failure Due to Latent Human Error		3.0E-03	3.0E-03	
	PAC1ETBBHM	4160 V ac Switchgear 1ETB Is Unavailable	1.0E-03	2.0E+00	2.0E-03	
	RNC032BPRC	PORV 1NC32B Fails to Reseat	1.8E-02	1.0E+00	1.8E-02	
17	Y	SGTR		1.2E-02	1.2E-02	1.1E-09
	FCA0TDPTPR	Turbine Driven Pump Fails to Run	3.6E-03	2.4E+01	8.6E-02	
	FCAMDPSCOM	Common Cause Failure of Both Motor Driven Pumps to Start		9.5E-05	9.5E-05	
	TFBLD01DHE	Operators Fail to Establish Feed and Bleed Cooling		1.2E-02	1.2E-02	
18	Y	SGTR		1.2E-02	1.2E-02	1.0E-09
	FCA0TDPTPR	Turbine Driven Pump Fails to Run	3.6E-03	2.4E+01	8.6E-02	
	KRN0291AVT	Air Operated Valve 1RN291 Transfers Position	2.7E-06	2.4E+01	6.5E-05	
	WRNLOPBTRM	RN Loop B In Maintenance		1.6E-02	1.6E-02	

Catawba PRA Revision 2b SGTR Cut Sets Greater Than 1E-09

#	Inputs	Description	Rate	Exposure	Event Prob	Probability
					Total	3.4E-08

The SGTR core damage sequence result is dominated by sequences where a pressurizer PORV is opened to equalize pressure and fails to reseat. This results in a small LOCA and core damage occurs when recirculation fails. This may occur due to various hardware failures or due to human error.

System Identifier	System Name	Comments
CA	Auxiliary Feedwater	
CF	Main Feedwater	
KC	Component Cooling	Closed loop cooling system; provides cooling to pumps and ND heat exchanger.
NC	Reactor Coolant	
ND	Residual Heat Removal	Low head safety injection function
NI	Safety Injection	Intermediate head injection function
NV	Chemical and Volume Control	Normal charging and high head injection function
RC	Condenser Cooling	Flood source
RN	Nuclear Service Water	Ultimate heat sink
SSF	Standby Shutdown System	Alternate source of Reactor Coolant Pump seal injection

ESFAS	Engineered Safety Features Actuation System