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AUTH.NAME AUTHOR AFFILIATION
UTLEY,E.E. CAROLINA POWER & LIGHT CO.
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. OPERATING REACTORS BRANCH 1

SUBJECT: REQUESTS CHANGE IN TECH SPECS TO REFLECT DELETION OF PRESSURIZER PRESSURE SIGNAL,W/SUPPORTING DOCUMENTATION & CLASS III AMEND FEE.

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Carolina Power & Light Company

May 18, 1979

FILE: NG-3514(R) SERIAL: GD-79-1309

Office of Nuclear Reactor Regulation
ATTENTION: Mr. Albert Schwencer, Chief
Operating Reactors Branch No. 1
United States Nuclear Regulatory Commission
Washington, D. C. 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
REQUEST FOR LICENSE AMENDMENT - PRESSURIZER PRESSURE SIGNAL

Dear Mr. Schwencer:

In accordance with the Code of Federal Regulations, Title 10, Part 50.90 and Part 2.101, Carolina Power & Light Company (CP&L) hereby requests a revision to the Technical Specifications for its H. B. Robinson Steam Electric Plant, Unit No. 2. This request reflects changes brought about by the deletion of the Pressurizer Level signal from the, "Low Level in Coincidence with Low Pressurizer Pressure," safeguards actuation signal and converting the three channels of pressure protection into a two out of three logic as prompted by IE Bulletin No. 79-06A. A diagram of the change is attached.

Enclosed are replacement pages for H. B. Robinson Steam Electric Plant, Unit No. 2 Technical Specifications which reflect these revisions. Appropriate changes are indicated by the vertical lines in the right hand margin of the affected pages.

In accordance with 10CFR170.12(c), we have determined that this revision constitutes one Class III Amendment. Accordingly, our check for $4,000 is enclosed.

Carolina Power & Light and Westinghouse Corporation, the NSSS vendor, have analyzed this modification and concluded that it involves no problems with the current safety analysis. A copy of Westinghouses's safety evaluation is attached.

H. B. Robinson Unit No. 2 is currently scheduled to start up following refueling on May 22, 1979. A favorable review and issuance of this amendment is requested by that date. This will greatly facilitate the operation of the unit when returning to power operation. Start-up without the change and then switch over at power will increase the probability of tripping the unit and cause unnecessary down time.

w/Encl Check for $4,000

Acel 5 3/13

7905220346

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

If you have any question on this issue, please contact our staff.

Yours very truly,

E. E. Utley
Executive Vice President
Power Supply

EEU/tl
Attachments

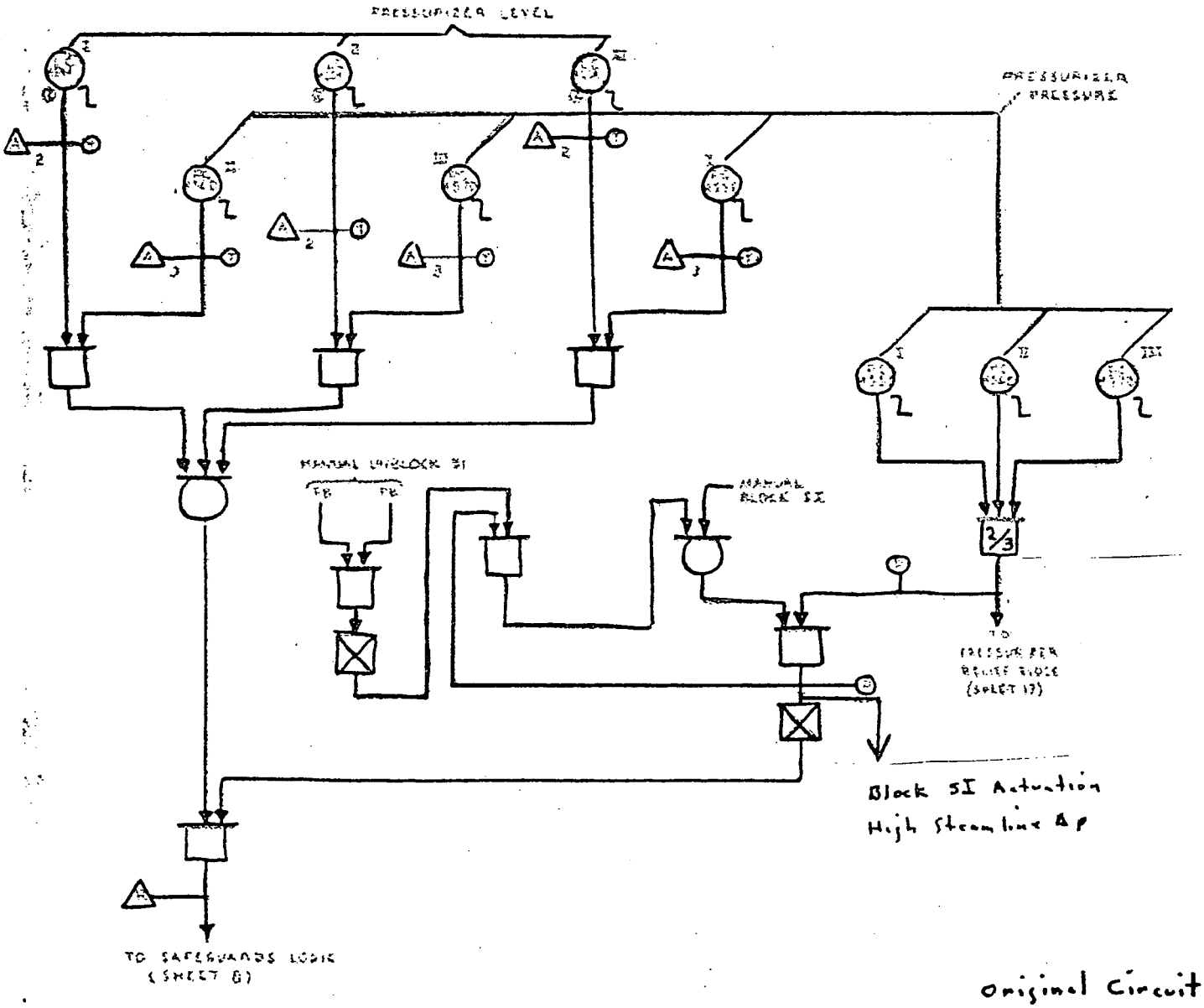
Sworn to and subscribed before me this

Franklin Murray
Notary Public

My Commission Expires:

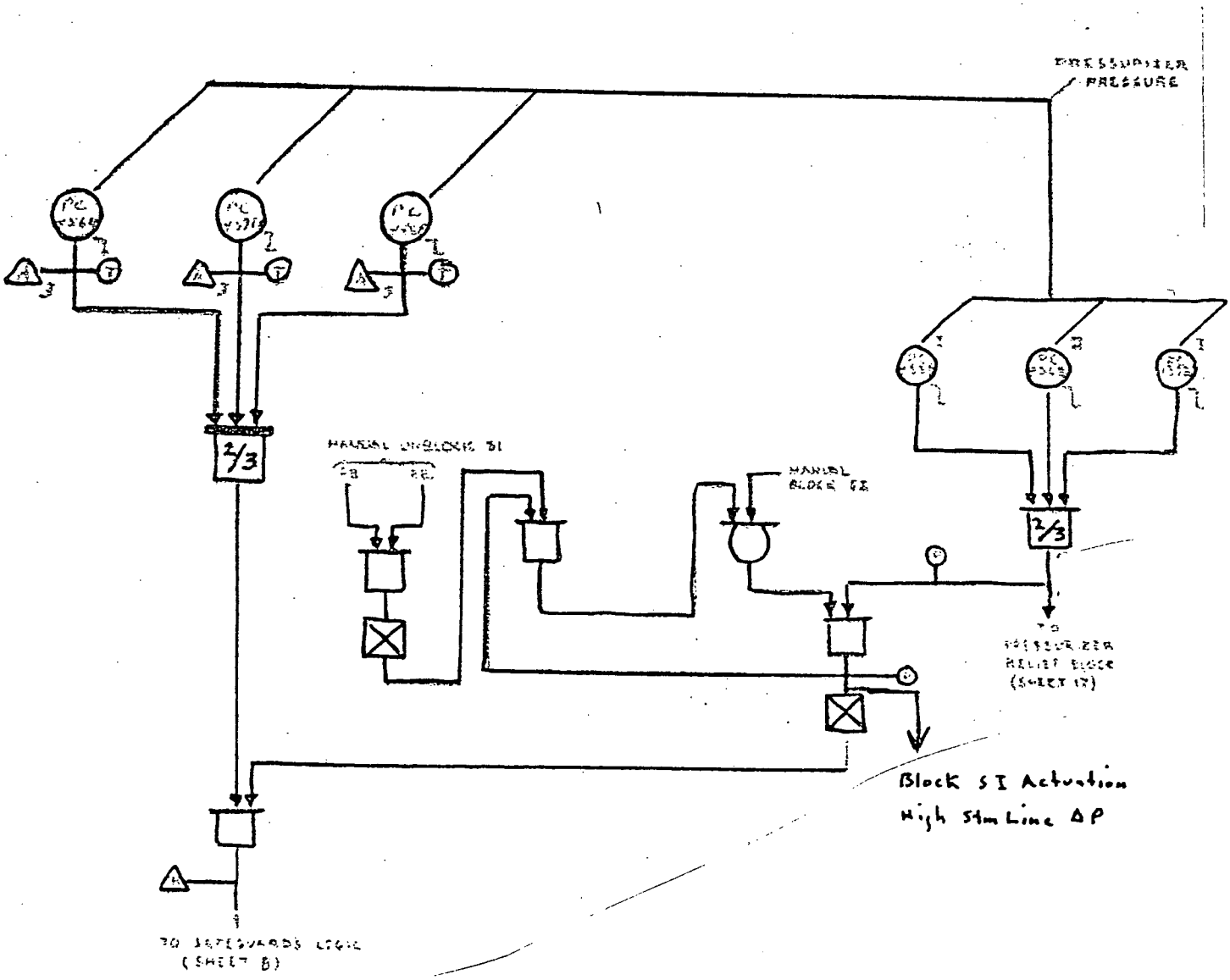
FRANKLIN MURRAY
NOTARY
PUBLIC
WAKE COUNTY, N. C.

Low Pressurizer Pressure Coincident with Low Pressurizer Level



original Circuit

Low Pressurizer Pressure



Block SI Actuation
High Stm Line ΔP

Revised Circuit

Safety Injection System Actuation

Protection against a Loss-of-Coolant or Steam Break accident is brought about by automatic actuation of the Safety Injection System which provides emergency cooling and reduction of reactivity.

The Loss-of-Coolant Accident is characterized by depressurization of the Reactor Coolant System and rapid loss of reactor coolant to the containment. The Engineered Safety Features have been designed to sense these effects of the Loss-of-Coolant Accident by detecting low pressurizer pressure and generates signals actuating the SIS active phase. The SIS active phase is also actuated by a high containment pressure signal (Hi-Level) brought about by loss of high enthalpy coolant to the containment. This actuation signal acts as a backup to the low pressurizer pressure signal actuation of the SIS and also adds diversity to protection against loss of coolant.

Signals are also provided to actuate the SIS upon sensing the effects of a steam line break accident. Therefore, SIS actuation following a steam line break is designed to occur upon sensing high differential steam pressure between the steam header and steam generator line or upon sensing high steam line flow in coincidence with low reactor coolant average temperature or low steam line pressure.

The increase in the extraction of RCS heat following a steam line break results in reactor coolant temperature and pressure reduction. For this reason protection against a steam line break accident is also provided by low pressurizer pressure signals actuating safety injection.

Protection is also provided for a steam line break in the containment by actuation of SIS upon sensing high containment pressure.

Feedwater Line Isolation

The feedwater lines are isolated upon actuation of the Safety Injection System in order to prevent excessive cooldown of the reactor coolant system. This mitigates the effect of an accident such as steam break which in itself causes excessive coolant temperature cooldown.

Feedwater line isolation also reduces the consequences of a steam line break inside the containment, by stopping the entry of feedwater.

Setting Limits

a. The Hi-Level containment pressure limit is set at about 10% of design containment pressure. Initiation of Safety Injection protects against Loss-of-Coolant[2] or steam line break[3] accidents as discussed in the safety analysis.

b. The Hi-Hi Level containment pressure limit is set at about 50% of design containment pressure. Initiation of Containment Spray and Steam Line Isolation protects against large Loss-of-Coolant[2] or steam line break accidents[3] as discussed in the safety analysis.

c. The pressurizer low pressure limit is set substantially below system operating pressure limits. However, it is sufficiently high to protect against a Loss-of-Coolant Accident as shown in the safety analysis.[2]

TABLE 3.5-1

ENGINEERED SAFETY FEATURE SYSTEM INITIATION INSTRUMENT SETTING LIMITS

NO.	FUNCTIONAL UNIT	CHANNEL ACTION	SETTING LIMIT
1	High Containment Pressure (Hi Level)	Safety Injection*	$\leq$ 5 psig
2	High Containment Pressure (Hi-Hi Level)	a. Containment Spray** b. Steam Line Isolation	$\leq$ 25 psig
3	Pressurizer Low Pressure	Safety Injection*	$\geq$1700 psig
4	High Differential Pressure Between any Steam Line and the Steam Line Header	Safety Injection*	$\leq$ 150 psi
5	High Steam Flow in 2/3 Steam Lines***	a. Safety Injection*	$\leq$ 40% (at zero load) of full steam flow
		b. Steam Line Isolation	$\leq$ 40% (at 20% load) of full steam flow
			$\leq$110% (at zero load) of full steam flow
	Coincident with Low T_{avg} or		$\geq$541°F T_{avg}
	Low Steam Line Pressure		$\geq$600 psig steam line pressure

*Initiates also containment isolation (Phase A), feedwater line isolation and starting of all containment fans.

**Initiates also containment isolation (Phase B).

***Derived from equivalent ΔP measurements.

TABLE 3.5-3

INSTRUMENTATION OPERATING CONDITIONS FOR ENGINEERED SAFETY FEATURES

NO.	FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1.	SAFETY INJECTION			
	a. Manual	1	0	Cold shutdown
	b. High Containment Pressure (Hi Level)	2	1	Cold shutdown
	c. High Differential Pressure between any Steam Line and the Steam Line Header	2	1	Cold shutdown
	d. Pressurizer Low Pressure	2	1	Cold shutdown***
	e. High Steam Flow in 2/3 Steam Lines Coincident with Low T_{avg} or Low Steam Pressure	1/Steam line	*****	Cold shutdown****
		2 T_{avg} Signals	1	
		2 Pressure Signals	1	
2.	CONTAINMENT SPRAY			
	a. Manual	2	0**	Cold shutdown
	b. High Containment Pressure (Hi-Hi Level)	2/set	1/set	Cold shutdown

**Must actuate two switches simultaneously.
***When primary pressure is less than 2000 psig, channels may be blocked.
****When primary temperature is less than 547°F, channels may be blocked.
*****In this case the 2/3 high steam flow is already in the trip mode.

H. B. ROBINSON (CPL) PRESSURIZER LEVEL/PRESSURE COINCIDENCE MODIFICATION SAFETY EVALUATION

Westinghouse has performed a safety evaluation of the safety injection actuation logic modifications for application to the H. B. Robinson Nuclear Unit. The existing logic will be modified by deleting the low pressurizer pressure coincident with low pressurizer level actuation logic and converting the protection system to a two-out-of-three low pressurizer pressure actuation only.

The basis for this modification is that the three existing pressurizer pressure channels are used for safety injection actuation and two channels are used for control system function. Control and protection interaction requirements set forth in IEEE-279 are satisfied by the fact that control transmitters are independent from protection transmitters.

All current ECCS analyses are valid and appropriate for plants with safety injection initiation as a function of pressurizer pressure signals only. Previously safety injection was initiated on coincident pressurizer pressure and level signals. The effect of changing to a pressure only signal will result in either an earlier initiation of safety injection, or no change in the time of safety injection initiation for all break locations. For small breaks in the pressurizer the pressure only signal will assure SI actuation. Therefore, current small break analysis assumptions concerning safety injection initiation time are appropriate. Additionally, the effect of safety injection initiation time on peak clad temperature is negligible when initiation times being considered correspond to RCS pressures above 1400 psia. The switch to a pressure only safety injection signal results in a negligible impact on large break analyses.

We have determined that the logic changes described above are acceptable for the H. B. Robinson Unit with the following qualification:

The design changes and installation will be implemented by Carolina Power & Light Company and it is our responsibility to ensure that all design, equipment and wiring modifications meet the design basis set forth above.