



MIDDLE SOUTH
UTILITIES SYSTEM

LOUISIANA
POWER & LIGHT

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February 7, 1985

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A4.05

Director of Nuclear Reactor Regulation
Attention: Mr. G.W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Waterford SES Unit 3
Docket No. 50-382
Associated Circuits Analysis
Analysis of Damage Prior to Transfer/
Isolation of Control Room Circuit

- REFERENCES:
- 1) Letter from G.W. Knighton (NRC) to R.S. Leddick (LP&L), "Request for Additional Information - Spurious Signal Analysis", dated December 26, 1984
 - 2) Letter W3P85-0062 from K.W. Cook (LP&L) to G.W. Knighton (NRC), "Associated Circuits Analysis", dated January 10, 1985
 - 3) Letter W3P84-3325 from K.W. Cook (LP&L) to G.W. Knighton (NRC), "Associated Circuits Analysis" dated November 30, 1984

Dear Sir:

The purpose of this letter is to provide information requested by Reference 1 on the effects of Control Room/Cable Vault (CR/CV) circuit damage prior to transfer/isolation. It is submitted within the 30 day extension of the Reference 1 deadline as requested by Reference 2.

Our previous analysis of the CR/CV in Reference 3 assumed no damage from a postulated fire occurred prior to transfer/isolation of circuits essential for achieving and maintaining safe shutdown. This analysis has now been extended to include a single spurious actuation prior to transfer/isolation.

Table 1 (attached) lists the hot standby components where the provided alternate shutdown control is interrupted due to loss of common power supply from one electrical fault occurring prior to manual isolation of the affected (CR/CV) portion of the circuit. Note that only three essential circuits are susceptible to the blown fused power supplies concern of Reference 1. Damage to the remaining ten alternate shutdown circuits is limited to tripped circuit breakers which can be reset by the operator. Damage prior to transfer/isolation of all other essential control circuits originating from the CR/CV, is not a concern for the remaining components or circuits as they fall into one of the following categories:

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1. Loss of power does not degrade shutdown capability since the desired effect after isolation from the CR/CV is de-energization of the control circuit.
2. Safe shutdown capability is not adversely affected by any one spurious actuation (i.e. loss of control power) because redundant circuits exist which are transferred/isolated from CR/CV to continue the safe shutdown process effectively.
3. Equipment is accessible for manual operation.
4. Equipment is required for cold shutdown. Although the power source may be lost initially, it can be restored before the equipment is required for service.
5. The control power for the piece of equipment is either an ungrounded 120V vital AC source or an ungrounded 125V DC source. Since only the positive or negative leg of the power source is exposed to the hazards of fire in a cable, no one electrical fault (i.e. hot short, open circuit, or short to ground) will result in the flow of current intensity capable of interrupting the power supply.
6. The power source is entirely outside of the fire zone, that portion of the circuitry that may be exposed to fire cannot disable the power source because it contains either isolation (electronic logic) or current limiting (dropping resistor) properties.
7. The circuit is normally de-energized with the power breaker locked in the open position.

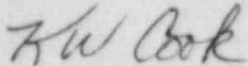
Proposed hardware changes for the three fused control circuits affected by the concerns of Reference 1 are listed in Table 1. These changes are recommended in conjunction with modifications resulting from the previously submitted spurious signal analysis (Reference 3). They are considered only preliminary pending comprehensive review of all architect engineer recommendations by our project engineering group and anticipated further guidance from the NRC. It is our understanding based on previous discussions with Auxiliary Systems Branch reviewers, that an IE Bulletin addressing the concerns of Reference 1 will be forthcoming in the near future. Upon issuance of this guidance, we will direct our architect engineer to provide detailed design recommendations consistent with our schedule for installing station modifications resulting from the spurious signal analysis (i.e. prior to startup following the first refueling outage).

We trust that the information provided will enable you to satisfactorily complete your review of our Associated Circuits Analysis. Should you have

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further questions regarding this analysis please contact R.J. Murillo, Safety and Environmental Licensing Coordinator, at (504) 595-2838.

Very truly yours,



K.W. Cook
Nuclear Support & Licensing Manager

KWC/KNC/pcl

Attachment

cc: E.L. Blake, W.M. Stevenson, D.M. Crutchfield, J. Wilson, J. Weirmiel,
R.D. Martin, G.L. Constable

Faded watermark text:
ARMSTRONG BOND
50% COTTON FIBER
U.S.A.

LOUISIANA POWER & LIGHT COMPANY
 WATERFORD SES UNIT NO. 3
 ASSOCIATED CIRCUITS ANALYSIS
 CONTROL ROOM/CABLE VAULT
 DAMAGE PRIOR TO TRANSFER/ISOLATION
RECOMMENDED MODIFICATIONS

Table 1
 Page 1 of 3

<u>REF. NO/CWD</u>	<u>COMPONENT DESCRIPTION</u>	<u>PROPOSED HARDWARE MODIFICATION</u>	<u>PROPOSED OPERATOR ACTION</u>	<u>REMARKS</u>
1/295	Pressurizer Auxiliary Spray		<u>120V Vital AC PDP391-SB, CKT #31</u> Reset the Circuit Breaker	Control Station is available on Panel LCP-43
2/799	Dry Tower B Isolation Valve 3CC-B203B and Bypass Valve 3CC-B262B		<u>120V Vital AC PDP391-SB, CKT #17</u> Reset the Circuit Breaker	Isolation Switch will direct Isolation Valve to an open position and the bypass valve to a closed position
3/826	Chillers Coolant Selective Valves - System B 3CC-F273B, 3CC-F275B, 3CC-F277B, 3CC-F279B		<u>120V Emergency AC PDP361-9B, CKT #11</u> Reset the Circuit Breaker	Isolation Switch will automatically select dry tower or wet tower as a source for chiller coolant, function of Auxiliary CCW Pump B operation
4/1058	Water Chiller B Recirculation Pump P-1 (3B-SB)	Install standby fuse and selector switch	<u>480V MCC 3B311-S, Compt 5H</u> Select the Standby Fuse with the Selector Switch	Control Station is available on Chiller Control Local Panel
5/1079	Switchgear Area A-H Unit AH-25 (3B-SB)	Install standby fuse and selector switch	<u>480V MCC 3B313-S, Compt 5H</u> Select the Standby Fuse with the Selector Switch	A local control station is available to start/stop the unit

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6/495	Refueling Water Storage Pool Outlet Va. 2SI-L104B		<u>120V Emergency PDP395-SB,</u> <u>CKT #3</u> Reset the Circuit Breaker	Control Station is available on Panel LCP-43
7/702	CCW Pump A Header Isolation Valves: 3CC-F110AB and 3CC-F114AB		<u>120V Vital AC PDP391-SB,</u> <u>CKT #15</u> Reset the Circuit Breaker	Isolation Switch will direct valves to a closed position
8/703	CCW Pump B Header Isolation Valves: 3CC-F111AB and 3CC-F115AB		<u>120V Vital AC PDP391-SB,</u> <u>CKT #15</u> Reset the Circuit Breaker	Isolation Switch will direct valves to a closed position
9/1646	Steam Line 1 Isolation Valve 2MS-V602A		<u>125V DC PDP-3A1-DC-S,</u> <u>CKT #8</u> Reset the Circuit Breaker	A local control station is available for one time valve closure operation
10/1661	Steam Line 2 Isolation Valve 2MS-V604B		<u>125V DC PDP-381-DC-S,</u> <u>CKT #10</u> Reset the Circuit Breaker	A local control station is available for one time valve closure operation

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11/2367	Diesel-Generator B Voltage Indicator	Two 2 Amp fuses proposed for installation in series with the existing 6 Amp fuses in the blue and red-black wires of Cable 32367A-SB. The 2 Amp fuses will provide automatic protection for the 6 Amp fuses in case of a short circuit.		No operator's action will be required in this case
12/2388 2390	4kV and 480V Safety Bus B Undervoltage Monitoring Circuit		<u>125V DC PDP-3B-DC-S,</u> CKT #28 Reset the Circuit Breaker	Circuit will resume its function automatically by virtue of its design
13/2409 2411	4kV and 480V Safety Bus AB Undervoltage Monitoring Circuit		<u>125V DC PDP-3AB-DC-S,</u> CKT #23 Reset the Circuit Breaker	Circuit will resume its function automatically by virtue of its design