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ROOT, L. D. Iowa Electric Light & Power Co.
RECIP. NAME RECIPIENT AFFILIATION
DENTON, H. R. Office of Nuclear Reactor Regulation

SUBJECT: Forwards assessment of effect of nonsafety sys failures on safety sys performance, in response to 790917 ltr re IE Info Notice 79-22.

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TITLE: Resp 9/17/79 Denton Ltr-Interact Sfty Grde Sys & Non-Sgs

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	14 EEB	1	1	15 EFLT TRT SYS	1	1
	16 OELD	1	1	2 NRC PDR	1	1
	3 LPDR	1	1	5 M GROTENHUIS	1	1
	6 T MARSH	1	1	7 J ROSENTHAL	1	1
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OCT 16 1979

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Iowa Electric Light and Power Company

October 5, 1979
LDR-79-225

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
NUCLEAR GENERATION

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

This letter is our response to your letter dated September 17, 1979 concerning IE Information Notice 79-22. Enclosed you will find an assessment of the Duane Arnold Energy Center (DAEC) relative to the effect of non-safety system failures upon safety system performance. The report also contains the more specific and comprehensive information and analysis in the format requested by the NRC Staff during a briefing on Thursday, September 20, 1979.

The assessment and analysis were performed by our NSSS Vendor on a generic basis and reviewed by Iowa Electric, Nuclear Generation Division on a DAEC unique basis. As a result of this assessment, we have not identified any impact on safety actions or analysis conclusions which would increase the consequences of any FSAR events.

Three signed and notarized originals and thirty-seven additional copies of this letter and enclosure are submitted herewith. This submittal consisting of the foregoing letter and enclosure hereto is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

By: Larry D. Root
Larry D. Root
Assistant Vice President
Nuclear Generation

Subscribed and Sworn To Before Me On This 5th day of October, 19 79.

Linda R. Bales
Notary Public In And For
State of Iowa

LINDA R. BALES
My Commission Expires
September 30, 1980

7910150268

LDR/RFS/mz
Enclosure
cc: R. Salmon
D. Arnold
S. Tuthill
L. Liu
E. Hammond
K. Meyer
D. Wilson
T. Kevern (NRC)

TABLE - ENVIRONMENTAL INTERACTION

		Main Steam Line:				Feedwater			LOCA Inside Breaks		RWCU	Isolation Condenser	RCIC	HPCI
	Location	Inside Small	Inside Large	Reactor Bldg.	Turbine Bldg.	Inside	Reactor Bldg.	Turbine Bldg.	SML	LRG	Outside	Outside	Outside	Outside
RECIRC SYSTEM														
Pumps	DW	2	2	4	4	2	4	4	2	2	4	N/A	4	4
Valves & Operators	DW	3	3	4	4	3	4	4	3	3	4	N/A	4	4
MG Sets	RB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
MCC	RB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
Flow Control Syst.	CR	4	4	4	4	4	4	4	4	4	4	N/A	4	4
Control Inst. Transmitters	RB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
FEEDWATER DELIVERY SYST.														
Flow Elements	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
Level	DW/RB	2	2	4	4	2	4	4	2	2	4	N/A	4	4
Pumps	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
Valves & Operators	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
MCC	TB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
Flow Control System	CR	4	4	4	4	4	4	4	4	4	4	N/A	4	4
FW Heating	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
Instrument Air	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
Control Inst. Transmitter	RB/TB	4	4	2	2	4	2	2	4	4	4	N/A	4	4
TURBINE PRESSURE CONTROL														
Bypass Valves	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
Pressure Sensors	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
Control System	CR	4	4	4	4	4	4	4	4	4	4	N/A	4	4
NEUTRON MONITORING SYST.														
LPRMs & Cables	DW/RB	2	2	2	4	2	2	4	2	2	2	N/A	4	4
APRMs & Cables	DW/RB	2	2	2	4	2	2	4	2	2	2	N/A	4	4
RPIS/Rod Block Monitor	DW/RB	2	2	2	4	2	2	4	2	2	2	N/A	4	4
TIP	DW/RB	2	2	2	4	2	2	4	2	2	2	N/A	4	4
REACTOR PROTECTION SYST.														
Turbine Scram	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
MG Set	CB	4	4	4	4	4	4	4	4	4	4	N/A	4	4

TABLE – ENVIRONMENTAL INTERACTION (Cont.)

		Main Steam Line:				Feedwater			LOCA Inside Breaks		RWCU	Isolation Condenser	RCIC	HPCI
	Location	Inside Small	Inside Large	Reactor Bldg.	Turbine Bldg.	Inside	Reactor Bldg.	Turbine Bldg.	SML	LRG	Outside	Outside	Outside	Outside
REACTOR MAN. CONT. SYST.	RB/CR	4	4	4	4	4	4	4	4	4	4	N/A	4	4
SRV SYSTEM (Non ADS)	DW/RB	3	3	3	4	3	3	4	3	3	4	N/A	4	4
RBCCW SYSTEM	RB	4	4	2	4	4	2	4	4	4	2	N/A	4	4
RWCU	DW/RB	3	3	2	4	3	2	4	3	3	2	N/A	2	2
SUPPRESSION POOL														
Temperature Monitoring	RB/Torus	4	4	4	4	4	4	4	4	4	4	N/A	4	4
Level Monitoring	RB/Torus	4	4	2	4	2	4	4	4	4	4	N/A	4	4
CIRCUL. WATER SYSTEM (Non Safety)	Intake/TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
HVAC SYSTEM	All	2	2	2	2	2	2	2	2	2	2	N/A	2	2
NON 1E BATTERY SYST.	CB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
AC AUXILIARY ELECTRIC	RB/TB/CB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
CONDENSATE TRANSF. & STOR.	TB	4	4	4	3	4	4	2	4	4	4	N/A	4	4
MAIN TURBINE & CONTROLS	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
MAIN CONDENSER & CONTROL	TB	4	4	4	2	4	4	2	4	4	4	N/A	4	4
INSTRUMENT AIR SYSTEM														
Compressors	TB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
Piping & Controls	TB/RB/DW	2	2	2	2	2	2	2	2	2	2	N/A	2	2
FIRE PROTECTION SYSTEM	TB/RB/CR	4	4	4	4	4	4	4	4	4	4	N/A	4	4
CRD Hydraulic System (Non Scram)	RB	4	4	2	4	4	2	4	4	4	4	N/A	4	4

TABLE – ENVIRONMENTAL INTERACTION (Cont.)

		Main Steam Line:				Feedwater			LOCA Inside Breaks		RWCU	Isolation Condenser	RCIC	HPCI
	Location	Inside Small	Inside Large	Reactor Bldg.	Turbine Bldg.	Inside	Reactor Bldg.	Turbine Bldg.	SML	LRG	Outside	Outside	Outside	Outside
RV HEAD VENT	DW	2	2	4	4	2	4	4	①	①	4	N/A	4	4
SLC SYSTEM	DW/RB	3	3	2	4	3	2	4	3	3	2	N/A	2	2
REMOTE SHUTDOWN	RB	4	4	2	4	4	2	4	4	4	4	N/A	4	4
AIR COOLERS	RB	4	4	4	4	4	4	4	4	4	4	N/A	4	4
SUMP PUMP	RB	2	2	2	4	2	2	4	2	2	4	N/A	2	4

TABLE (Cont'd.)

SYSTEM	ANY HIGH ENERGY BREAK
Lighting	5
Communications	5
Service Air	5
Equip. Drain Piping	5
Drywell Temp. Monitoring	5
Under Vessel Maintenance Equip.	5
Process Computer	5
Area Radiation Monitoring	5
Process Radiation Monitoring (Non Safety Part)	5
Sampling Systems	5
Maintenance Monorails	5
Environs Monitoring	5
Demineralized Water	5
Potable Water	5
Screen Wash	5
Hydrogen Cooling	5
Condenser Priming	5
TBCCW	5
Stator Cooling	5
Offgas	5
Radwaste	5

TABLE (Cont'd)

1. Environmental induced malfunction may provide adverse response, i.e. increase in previously reported peak for:

   Drywell Pressure
   Wetwell Pressure
   Suppression Pool Temperature
   Fuel Clad Temperature

2. Environmental induced malfunction will not provide adverse response.

3. System is qualified for adverse environment.

4. System will not experience adverse environment.

5. No conceivable system failure can affect response.

EFFECT OF REACTOR HEAD VENT OPENING UPON A LOCA

The reactor head vent line is a small (2") line with two valves, which are air-operated. The probability of a LOCA causing a steam environment which could cause both of these series valves to open at the start of the event is small for air-operated valves. To bound the worst case however, we have assumed a LOCA combined with a simutaneous opening of this vent line. Depending on the size of the LOCA, there could be a $\pm$ 10^{o}F impact on Peak Clad Temperature. A later opening of the head vent line would reduce the maximum effect stated above.