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FILE NUMBER

TO: Mr. D. L. Ziemann

FROM: FPL
Miami, Fla.
R.E. UhrigDATE OF DOCUMENT
6-14-76DATE RECEIVED
6-15-76☒ LETTER
☒ ORIGINAL
☐ COPY☐ NOTORIZED
☒ UNCLASSIFIED

PROP

INPUT FORM

NUMBER OF COPIES RECEIVED
1 signedDESCRIPTION Ltr furn info on I&E electrical
equipment & trans the following:

1P

PLANT NAME: St. Lucie Unit 1

ENCLOSURE Info on the motors supplied for the
St. Lucie Unit 1 Reactor Containment Fan
Coolers.....

4P

(1 cy encl rec'd)

~~DO NOT REMOVE~~

ACKNOWLEDGED

SAFETY

FOR ACTION/INFORMATION

ENVIRO

DHL 6-18-76

ASSIGNED AD:

✓ BRANCH CHIEF:

✓ PROJECT MANAGER:

✓ LIC. ASST.:

(6)

Kniel
Rood
Lee

ASSIGNED AD:

BRANCH CHIEF:

PROJECT MANAGER:

LIC. ASST.:

INTERNAL DISTRIBUTION

✓ REG FILE

✓ NRC PDR

✓ I & E (2)

✓ OELD

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STELLO

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ENVIRO ANALYSIS

DENTON & MULLER

ENVIRO TECH.

ERNST

BALLARD

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SITE TECH.

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HULMAN

SITE ANALYSIS

VOLLMER

BUNCH

J. COLLINS

KREGER

EXTERNAL DISTRIBUTION

✓ LPDR: Ft. Pierce, Fla.

✓ TIC:

✓ NSIC:

ASLB:

✓ ACRS 16 CYS SENT TO L.A.

NAT LAB: - PNWL

REG. VIE

LA PDR

CONSULTANTS

BROOKHAVEN NAT LAB

ULRIKSON (ORNL)

CONTROL NUMBER

6080



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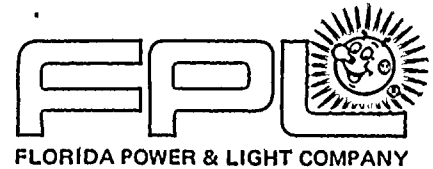
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Regulatory Docket



50-335



June 14, 1976
L-76-221

Director of Nuclear Reactor Regulation
Attn: Mr. Dennis Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Ziemann:

Re: St. Lucie Unit No. 1
Conditions of License



As condition E.3 to the St. Lucie Unit 1 operating license, the Commission required that Florida Power & Light Company provide qualification test records which demonstrate that the balance of plant Class IE electrical equipment, selected prior to issuance of the operating license for audit by the Commission, has been environmentally qualified. Subsequently all items identified in the audit have been satisfactorily resolved with the Commission, with the exception of the qualification of the containment fan cooler motors. The Commission has informally requested clarifying information to demonstrate that the motors provided for St. Lucie Unit 1 are embraced within the qualification tests reported in Westinghouse WCAP-7829, which report has been previously cited as the environmental qualification for the St. Lucie Unit 1 fan cooler motors.

Westinghouse has reviewed the design of the fan cooler motors supplied for St. Lucie Unit 1, and confirmed that the WCAP report envelopes the St. Lucie Plant design parameters (See Attachment 1). Additionally, Westinghouse has supplied information to compile a table (Attachment 2) comparing the WCAP-7829 test machine motors to the motors furnished for St. Lucie Unit 1. The table conclusively demonstrates that the topical report envelopes the motors furnished for St. Lucie Unit 1. The rise in insulation temperature is one of the better indices of this fact, since it shows that the motor has not been overloaded. The table shows the Type F insulation reaches a peak of 105.8°C whereas this insulation is rated for 155°C.

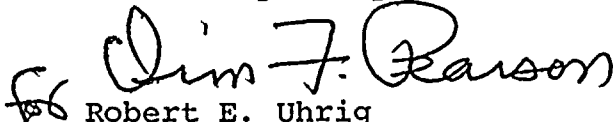
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To: Dennis Ziemann
Re: St. Lucie Unit No. 1
Conditions of License

June 11, 1976
Page -2-

This information is herewith submitted for your review and closeout of the condition prior to June 30, 1976. The information will also be available onsite for review by Inspection and Enforcement personnel.

Yours very truly,


Robert E. Uhrig
Vice President

REU/CSK/hlc

Attachments

cc: Jack R. Newman, Esq. (w/o attachments)
Mr. Norman C. Moseley (w/o attachments)
Mr. Harry Rood

Westinghouse Electric Corporation

Power Systems

PWR Systems Division

Box 355
Pittsburgh, Pennsylvania 15230

May 14, 1976
POE-SP-126

6-14-76

Florida Power & Light Co.
Ebasco Services, Inc., Agent
8th Floor
21 West Street
New York, New York 10006

Regulatory Docket File

ATTENTION: M. A. Jalil

Dear Mr. Jalil:

FLORIDA POWER & LIGHT CO.
ST. LUCIE PLANT
Reactor Containment Fan Cooler (RCFC)

The motors supplied for the St. Lucie Unit 1 Reactor Containment Fan Coolers are environmentally qualified by the tests performed by Westinghouse and reported in WCAP-7829. The environmental parameters used in the tests envelope those specified for St. Lucie Unit 1.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

John W. Irons
J. W. Irons, Lead Engineer
Specialty Products

/cs

File: XARN-80010-1B

F. Knight
F. Knight
Project Manager

TYPICAL MOTOR DESIGN PARAMETERS COMPARED TO TEST MACHINE

Parameters	Plants A. B. C. D			Plants E. F			Plant G			St Lucie			Test Machine		
	Normal	D.B. Event	Post Event	Normal	D.B. Event	Post Event	Normal	D.B. Event	Post Event	Normal	D.B. Event	Post Event	Normal	D.B. Event	Post Event
1. MOTOR PARAMETERS															
No. of Motors per plant	5	--	--	2 ⁽¹⁾	--	--	5	--	--	4	--	--	1	--	--
Frame Size (NEMA)	588.5	--	--	449 T	--	--	588.5	--	--	5010-L	--	--	588.5	--	--
Frame wt. #	3400	--	--	1000	--	--	3400	--	--	2620	--	--	3300	--	--
Bearing Rise °C	15	9	9	--	12	12	10	10	10	15	9	9-15	15	10	10
Inlet Air. °C	40	52	32	--	45	40	32	52	40	39.1	43.5	39.1-43.5	76	82	44
Rise of ins., °C	65	70	60	--	70	55	35	70	50	32.3	62.3	32.3-62.3	16	40	53
Total Temp. °C	105	122	92	--	115	95	67	122	90	71.4	105.8	71.4-105.8	92	122	97
Voltage + 10%	460	460	460	--	575	575	460	460	460	460	460	460	460	460	460
Frequency + 5%	60	60	60	--	60	60	60	60	60	60	60	60	60	60	60
Horse Power	300	100	100	--	75	75	100	225	225	75	15	100	20	19.93	15.25
Poles	6	12	12	--	8	8	10	10	10	12	12	12	4	6	6
Full Load R.P.M.	1185	595	595	--	896	896	699	699	699	596	592	594	1781	1193	1193
Service Factor	1.15	1.15	1.15	--	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Full load amps.	333	207	207	--	76	65	200	312	250	138	203	157	26.1	25.5	25.5
Locked Rotor Amps.	1992	1187	1187	--	370	366	1432	1432	1432	--	1055	--	110.0	144.3	144.3
Starting Torque %	247	244	244	--	130	130	113	140	140	232	115	--	58	72.3	72.3
Full Load Torque ft. #	1327	880	880	--	446	446	732	1690	1690	660.5	1330	--	59	88	88
Pullout Torque %	250	400	400	--	870	870	553	247	247	--	3340	--	196	215	215
Efficiency, F.L.	93.3	90.8	90.8	--	91	91	84	91.4	91.4	90.5	91.4	--	80.6	87.7	87.7
Power Factor, F.L.	90.3	49.7	49.7	--	34.4	69	58	77.3	77.3	53.9	74.8	--	92.7	87.4	87.4
Power Factor Locked	36.4	31.6	31.6	--	34.4	34.4	33.3	33.3	33.3	26.1	26.1	26.1	28.5	33.6	33.6
N.P. Code letter	F	L	L	--	F	F	E	E	E	J	F	H	D	G	G
Number of windings	1	1	1	--	1	1	1	1	1	1	1	1	2	2	2
Starts/hr at amb.	4	4	4	--	3	3	4	4	4	4 ⁽²⁾	4 ⁽²⁾	4 ⁽²⁾	4	4	4
Starts at rated total temp.	2	4	4	--	3	3	2	2	2	1	1	1	2	4	4
Motor Losses	16118	7604	7300	--	5500	4000	7500	15968	15968	5500	10900	6700	3597	2116	2116
2. REQUIRED AUXILIARIES															
Heat Exchanger															
3. ACCESSORY EQUIPMENT															
Bearing T.C.	Yes	--	--	--	No	--	No	--	--	No	--	--	Yes	--	--
Bearing Vibswitch	Yes	--	--	--	Yes	--	Yes	--	--	Yes	--	--	Yes	--	--
Stator R.T.D.	Yes	--	--	--	No	--	No	--	--	No	--	--	Yes	--	--
4. APPLICATION		Fan Cooler			Air Recirculation			Fan Cooler			Fan Cooler			Any	
5. ENVIRONMENT															
Time	--	--	--	--	--	--	--	--	--	40 yr	24 hrs	1 yr ⁽⁶⁾	40 yr	24 hrs	168 hrs ⁽⁵⁾
Integrated Dose (Rads) ⁽³⁾	--	--	--	--	--	--	--	--	--	--	2.6x10 ⁷	2.96x10 ⁶	2x10 ⁸	2x10 ⁸	2x10 ⁸
Pressure (PSIG)	--	--	--	--	--	--	--	--	--	0	44	0	0	80	16
Max Cont Temp (F) ⁽⁴⁾	--	--	--	--	--	--	--	--	--	120	240-270	130	122	322	245
Inlet Air Temp To Insulation (F)	--	--	--	--	--	--	--	--	--	--	--	--	100	130	100
Caustic Spray	--	--	--	--	--	--	--	--	--	No	Yes	No	No	Yes	No

NOTES:

- (1) Motors are idle in normal condition
- (2) Motor at operating temperature
- (3) Test machine was irradiated to 2×10^8 rads prior to Design Basis Event and Post Event Tests. The St Lucie integrated dose is less severe
- (4) Air inlet temperature to the motor is set by heat exchanger temperature, not by containment ambient.

- (5) IEEE 334-1971 tests were intended to simulate 1 year of design basis event and post event conditions; however, since the heat exchanger isolates the motor from the event environment, no extrapolation is necessary to confirm the ability of the motor to continue operating for 1 year following the design basis event.

- (6) The environmental data for St Lucie represents the most severe conditions the fan cooler can be subjected to.

