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SUBJECT: Forwards addl info re generic implications & resolution of CEA failure at Maine Yankee.

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L-90-323

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Gentlemen:

Re: St. Lucie Unit 1
Docket 50-335
Generic Implications and Resolution of
CEA Failure at Maine Yankee

By letter dated July 6, 1990, the Nuclear Regulatory Commission (NRC) staff requested additional information from Florida Power and Light (FPL) regarding the Combustion Engineering Regulatory Response Group (CERRG) Action Program for addressing the issue of irradiation assisted stress corrosion cracking (IASCC) in Control Element Assemblies (CEAs). By letter L-90-272, dated July 17, 1990, FPL confirmed its intent to follow the CERRG Action Program as well as committing to provide the results of the completed eddy current test (ECT) and visual inspections. FPL also committed to utilize the data taken during the ECT to update the CERRG Action Program. The revised Action Program and ECT results were submitted to the staff on August 16, 1990 FPL letter L-90-301.

In subsequent conversations, the staff requested FPL provide additional information to facilitate its review of the revised Action Program. Attachment One to this letter provides a description of the testing program for the old style CEAs in the Unit 1 core. Attachment Two provides other additional materials requested by the staff which FPL committed to furnish as a part of this submittal.

Should you have any questions, please contact us.

Very truly yours,

DA Sager
D. A. Sager
Vice President
St. Lucie Plant

DAS:JMP:kw

Attachments (2)

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

DAS/PSL #252

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Attachment One

**ST. LUCIE UNIT ONE
OLD STYLE CEA TESTING PROGRAM**

By letter L-90-301, dated August 16, 1990, Florida Power and Light (FPL) stated its intention to verify the structural integrity of the seventeen high exposure, old style CEAs in the Unit 1 core on a quarterly basis. In order to assess the FPL Action Program, the NRC staff requested that FPL describe its procedure for exercising the subject CEAs.

The FPL program for the verification of the structural integrity of the old style CEAs in the St. Lucie Unit 1 core consists of the following elements:

1. CEA Repositioning

The 17 high exposure old-design CEAs will be maintained in the fullest withdrawn position (i.e. - monthly CEA wear exercising will be discontinued for those CEAs).

2. Semi-weekly Incore Flux Monitoring

Neutron flux maps will be taken on a semi-weekly basis for the remainder of the cycle or until the old design CEAs have been replaced.

3. Exercising after Cold Shutdowns

A full insertion/withdrawal exercise of the 17 high exposure old design CEAs will be performed after each cold shutdown and reactor trip. This exercise program will stay in place until the end of the current cycle unless CEAs have been replaced prior to that time.

4. Quarterly Exercising

A quarterly full insertion/withdrawal exercise of the 17 high exposure old design CEAs will be performed in Hot Standby, or Mode 3 (exercising performed after cold shutdowns and/or trips will be considered as a quarterly exercise). This exercise will stay in place until the end of the current cycle unless CEAs have been replaced prior to that time, or if exercising (or other anomalous CEA movement restrictions) shows evidence of a stuck old style CEA. If the sticking of the CEA is determined to be attributable to a loss of structural integrity, the CEA will be immediately replaced prior to returning to power operation.

Quarterly exercising will be performed as follows:

- the reactor will be placed in Mode 3



- each CEA to be exercised will be raised from the fully inserted position to the fully withdrawn position, using the Control Element Drive Mechanism (CEDM)

- the CEA will then be returned to the fully inserted position using the CEDM

- each CEA will be exercised individually in this manner until all seventeen old style, high exposure CEAs have been exercised.

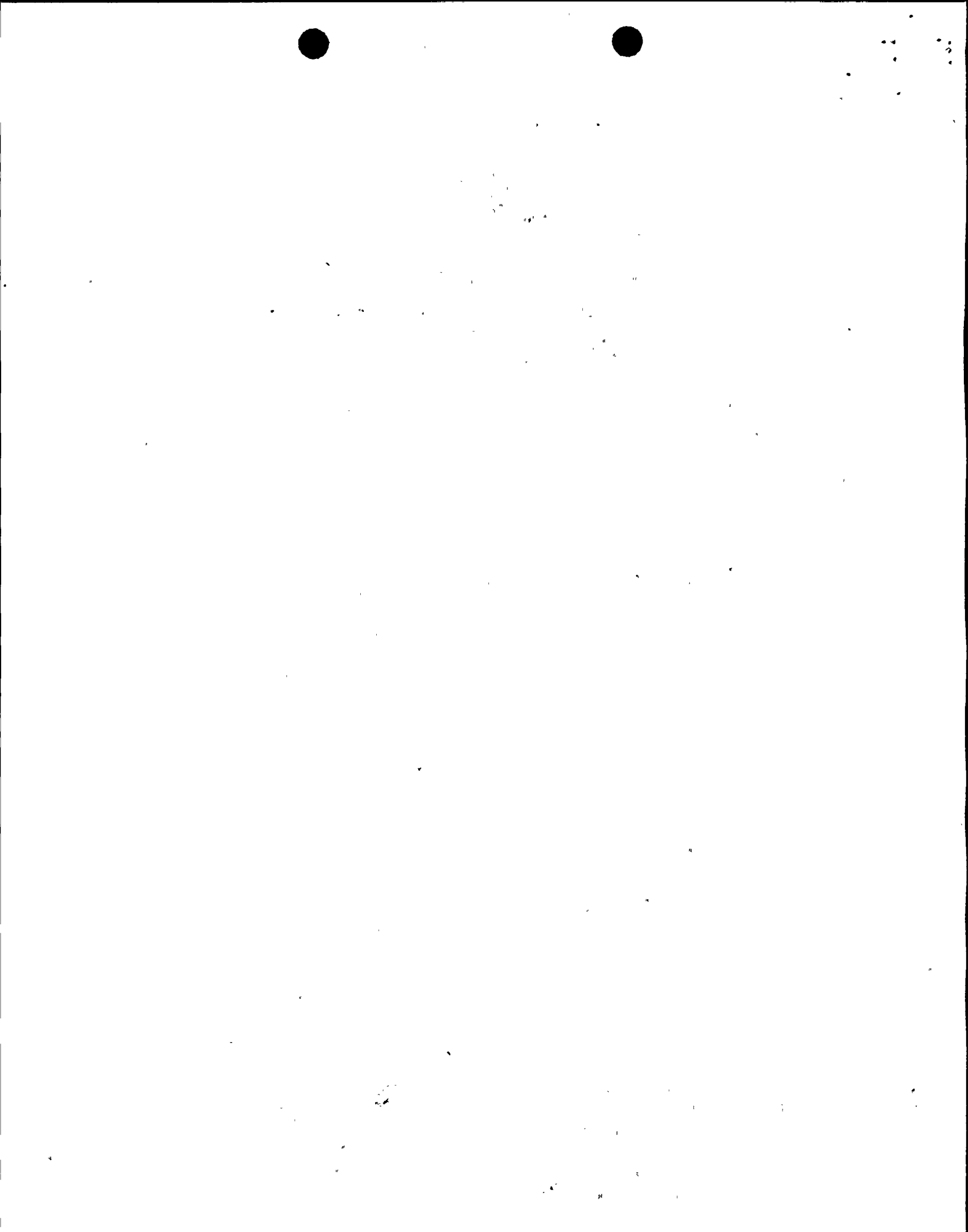
ATTACHMENT TWO

Records Search Results Summary

CEA ECT Inspection Results Summary

CEA Exposure Comparison

St. Lucie Unit 1 Cycle 10 CEA Reactivity Worth Core Map

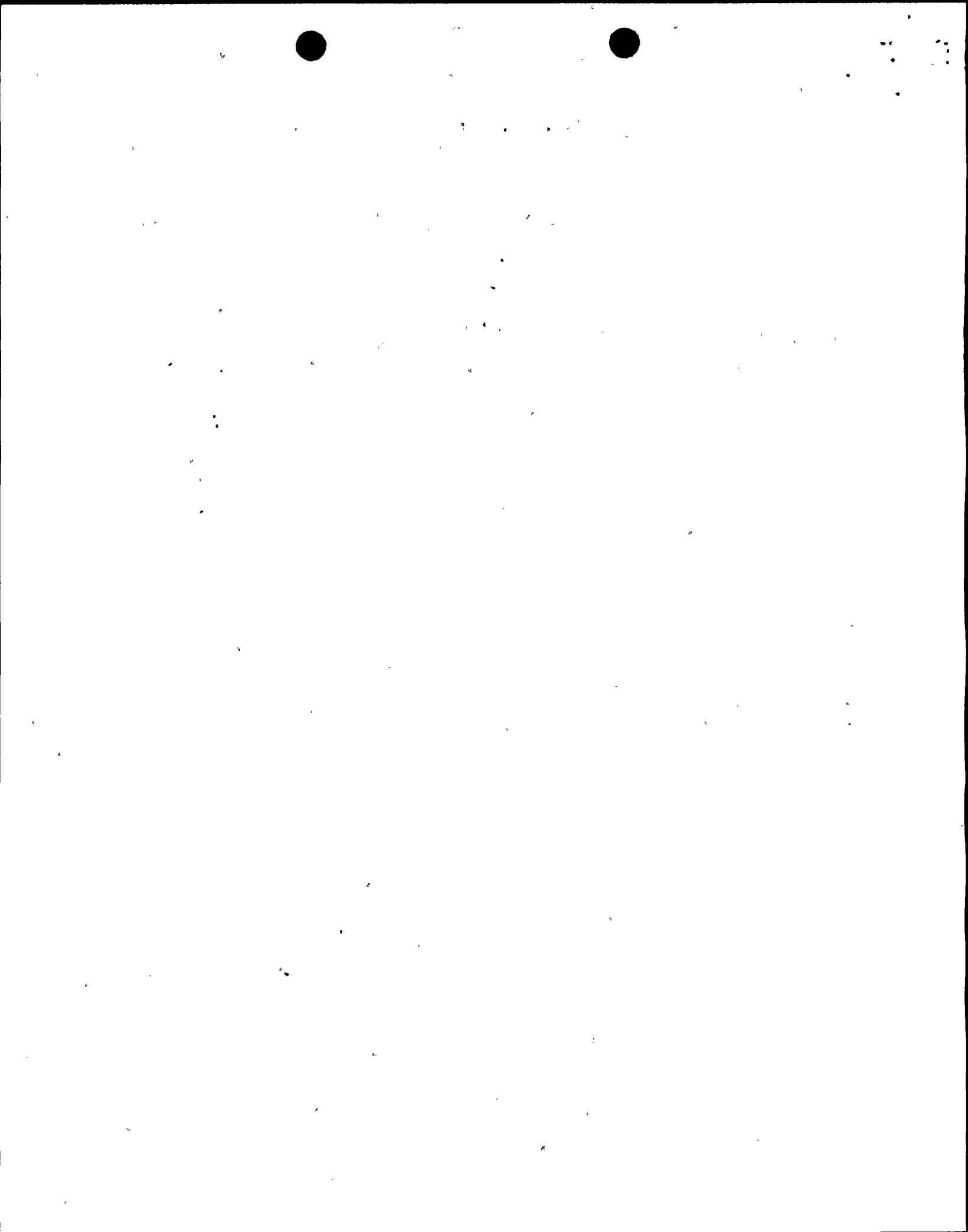


RECORDS SEARCH RESULTS SUMMARY

As stated in Florida Power and Light (FPL) letter L-90-272, dated July 17, 1990, a manufacturing record search/comparison has been conducted by FPL personnel. The intent of the review was to identify and document verifiable differences in the material, configuration, and manufacturing processes for the old style CEAs in place at St. Lucie Unit 1 compared to similar CEAs.

The review, which was conducted by the FPL Quality Assurance Department, investigated such items as tubing, endcaps, weld material, B₄C pellets, material manufacturing, and component manufacturing. Differences were encountered in the materials used for the tubes for St. Lucie Unit 1 CEAs in the areas of yield values, tensile strength, percent elongation and heat numbers. The values of these parameters were somewhat higher for the St. Lucie Unit 1 tube materials. However, all materials used were determined to be within the specifications of ASTM B444-66.

Overall, the review showed that the St. Lucie Unit 1 CEAs were manufactured in accordance with approved design and manufacturing specifications and processes. No objective evidence was uncovered that would indicate a problem or defect in the design, materials or manufacturing processes used to construct the St. Lucie Unit 1 CEAs.



ST. LUCIE UNIT 1
EDDY CURRENT TEST RESULTS

<u>CEA No.</u>	<u>Exposure (EFPD)</u>	<u>Indication Description</u>
4	3836	Axial crack, 0.2" in length
12	4340	Axial crack, 0.2" in length
19	3855	Axial crack, 3.4" in length
71	3979	Axial crack, 0.2" in length; not through wall
73	3986	Axial crack, 0.2" in length

Note: no evidence of circumferential cracking was detected

**EXPOSURE COMPARISON in EFPD
SPENT FUEL POOL CEAs and EOC 10 CEAs**

SPENT FUEL POOL CEAs

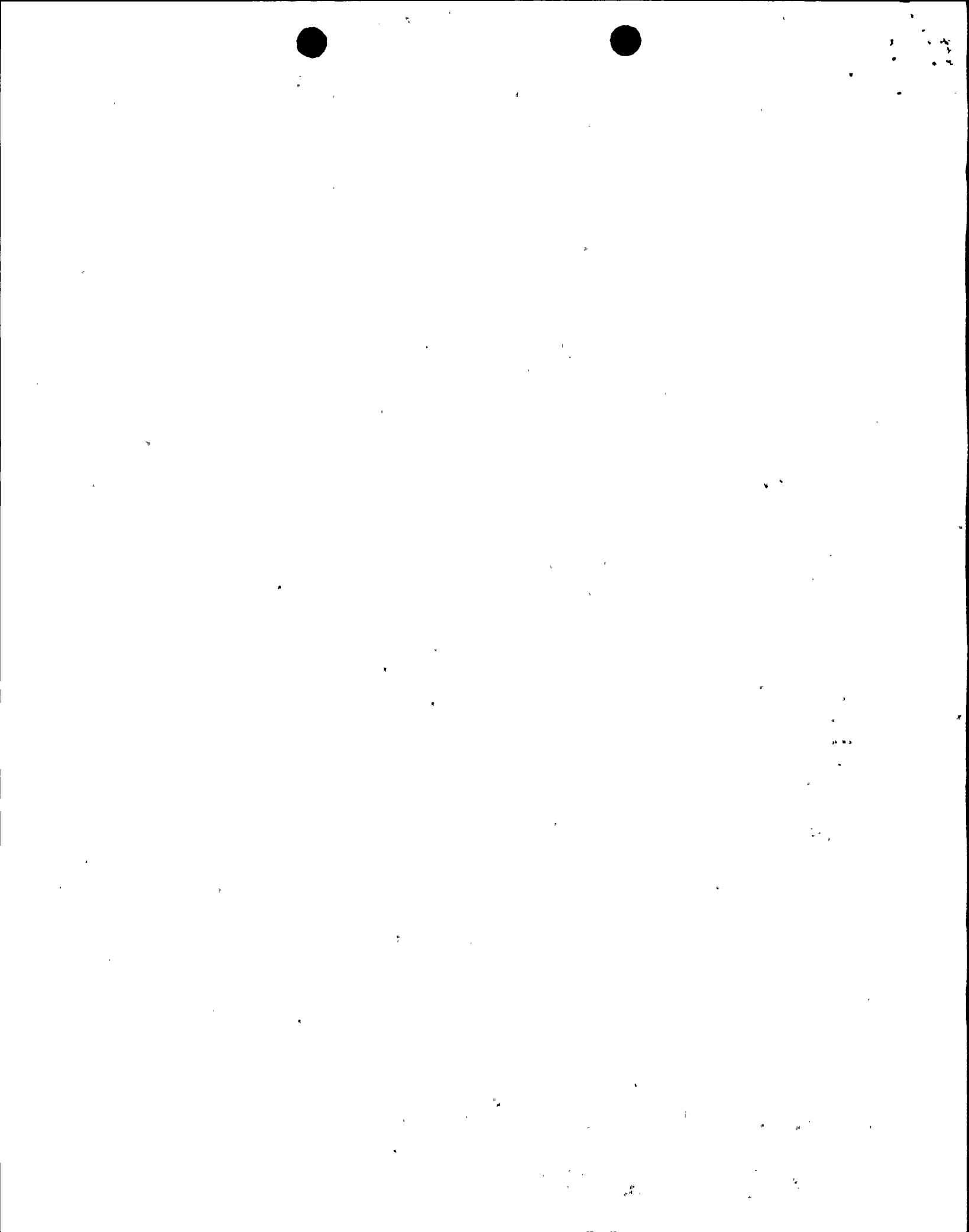
CYCLE 10 CORE CEAs

<u>CEA Number</u>	<u>Exposure (EFPD)</u>	<u>CEA Number</u>	<u>Exposure at EOC (EFPD)</u>
		75	1241
		76	1482
		77	1777
4	3836		
41	3853		
19	3855		
47	3863		
5	3867		
61	3868		
25	3874		
70	3965		
72	3978		
71	3979		
73	3986		
23	4048		
21	4054		
45	4054		
43	4062		
		3	4072
9	4075		
8	4077		
27	4082		
30	4086		
57	4087		
36	4088		
58	4089		
39	4090		
		52	4105
		74	4105
		6	4109
		14	4109
		55	4114
		63	4122
		1	4124
34	4128		
22	4129		
32	4132		
		2	4135
29	4136		
38	4139		
28	4141		
		40	4142

SPENT FUEL POOL CEAS

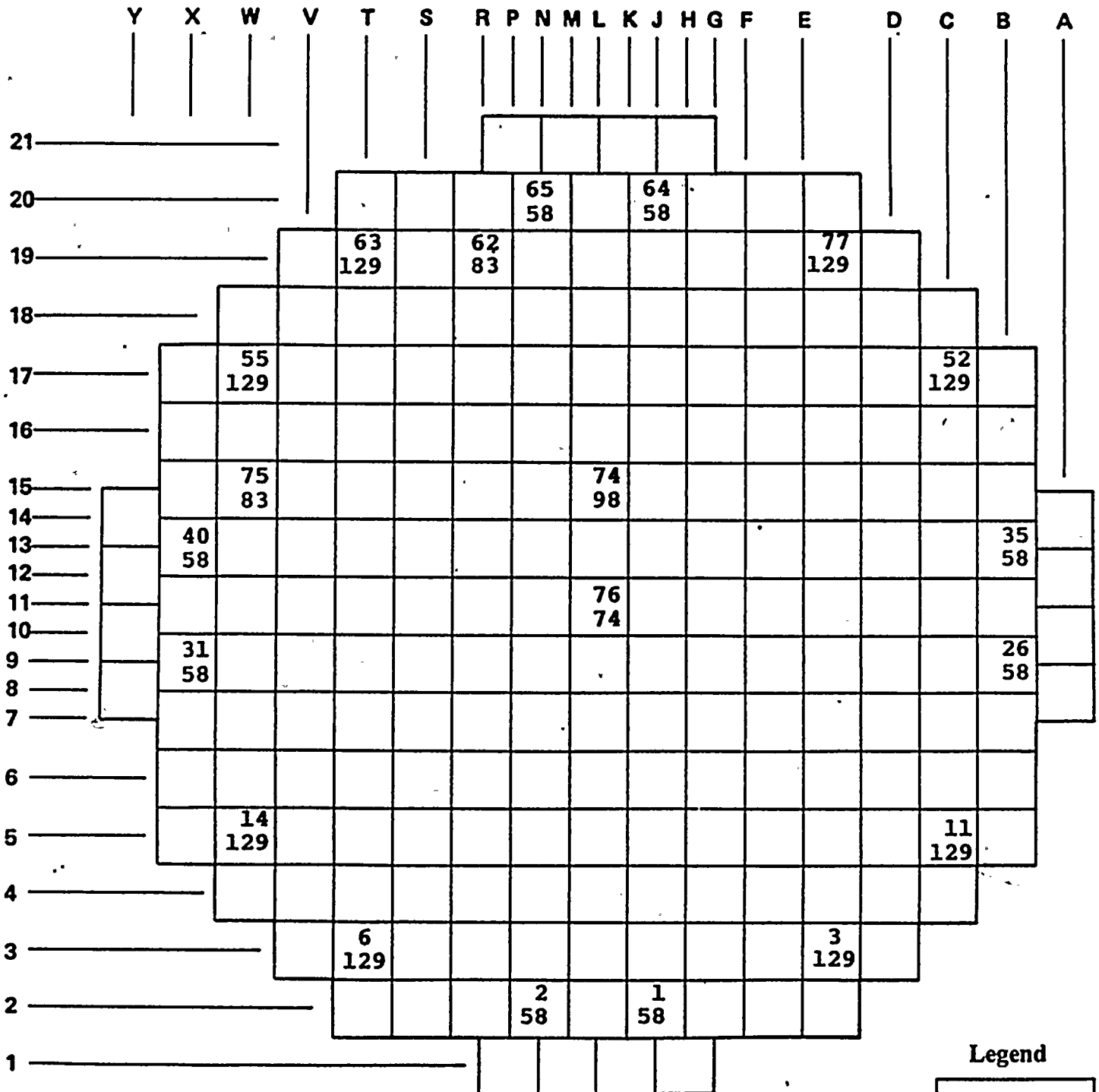
CYCLE 10 CORE CEAS

<u>CEA Number</u>	<u>Exposure (EFPD)</u>	<u>CEA Number</u>	<u>Exposure at EOC (EFPD)</u>
37	4143	11	4149
		26	4149
		35	4149
		64	4149
		31	4155
		65	4229
7	4237		
15	4251		
18	4260		
48	4262		
10	4267		
56	4267		
51	4275		
59	4277		
17	4335		
24	4336		
13	4337		
16	4338		
20	4339		
12	4340		
50	4344		
42	4344		
54	4345		
49	4349		
53	4350		
46	4359		
		62	4524



St. Lucie Unit 1 Cycle 10

BOC HFP Reactivity Worth
of 20 B4C Center Finger Design
CEAs and Associated Duals



CEAs 3, 6, 11, 14,
52, 55, 63, 77 are
Dual CEAs

Legend

CEA I.D.

Worth (pcm)



6-2-72