C 06/13/78

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)
DISTRIBUTION FOR INCOMING MATERIAL 50-261

REC: SCHWENCER A
NRC

ORG: UTLEY E E
CAROLINA PWR & LIGHT

DOCDATE: 06/09/78
DATE RCVD: 06/12/78

DOCTYPE: LETTER NOTARIZED: NO
SUBJECT:
RESPONSE TO NRC LTR DTD 03/30/78...FURNISHING ADDL INFO IN SUPPORT OF APPLICANT"S REQUEST FOR A 50% WASTAGE STEAM GENERATOR TUBE PLUGGING LIMIT...W/ATT.

COPIES RECEIVED
LTR 1 ENCL 10

PLANT NAME: H B ROBINSON - UNIT 2

REVIEWER INITIAL: XJM
DISTRIBUTOR INITIAL: DL

********** DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS **********

GENERAL DISTRIBUTION FOR AFTER ISSUANCE OF OPERATING LICENSE.
(DISTRIBUTION CODE A001)

FOR ACTION: BR CHIEF ORB#1 BC**W/7 ENCL

INTERNAL:
REG FILE**W/ENCL
I & E**W/2 ENCL
HANAUER**W/ENCL
AD FOR OPER TECH**W/ENCL
REACTOR SAFETY BR**W/ENCL
EEB**W/ENCL
J. MCGOUGH**W/ENCL
NRC PDR**W/ENCL
OELD**LTR ONLY
CORE PERFORMANCE BR**W/ENCL
ENGINEERING BR**W/ENCL
PLANT SYSTEMS BR**W/ENCL
EFFLUENT TREAT SYS**W/ENCL

EXTERNAL:
LPDR'S
HARTSVILLE, SC**W/ENCL
TIC**W/ENCL
NSIC**W/ENCL
ACRS CAT B**W/16 ENCL

DISTRIBUTION: LTR 40 ENCL 39
SIZE: 2P+6P

CONTROL NBR: 781640009

********** THE END **********

FILE LOCATION

78129-0048 TASK NBR:
LETTER FICHE NBR :
2P+15+13P NOTARIZED: NO
LPDR: YES CLASS:

RECP AFFILIATION: NRC
ORG AFFILIATION: WI ELEC PWR

DING RESULTS OF THE SPRING 1977 UNIT 2 REACTOR VESSEL INSPEC OF SUBJECT
TY...W/ATT SUPPORTING INFO AND DRAWINGS.

VRAIN
78130-0234 TASK NBR:
OTHERS FICHE NBR :
6P+50P NOTARIZED: NO
LPDR: YES CLASS:

RECP AFFILIATION: NRC
ORG AFFILIATION: NRC

Y OF MEETINGS 4/19,20/78 TO DISCUSS PERMITTING FSV CONTINUED PWR ASCENSION
70% PWR, DISCUSS ITEMS PRESENTED IN AMEND 18 OF THE SAFETY EVALUATION REPT
ESENT STATUS REPT ON STEAM GENERATOR LEAK REPAIR AND FSV PWR OSCILLATIONS.
(5) AS STATED.

78130-0112 TASK NBR:
LETTER FICHE NBR :
1P+6P NOTARIZED: NO
LPDR: YES CLASS:

RECP AFFILIATION: NRC
ORG AFFILIATION: PUB SVC CO OF CO

DING SUBJECT FACILITY"S MONTHLY OPERATING REPT FOR THE MONTH OF APRIL,

CP&L
Carolina Power & Light Company

June 9, 1978

FILE: NG 3514 (R) SERIAL: 78 1614

Office of Nuclear Reactor Regulation
Division of Operating Reactors
ATTN: Mr. A. Schwencer, Chief
Operating Reactors Branch No. 1
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
STEAM GENERATOR TUBE PLUGGING LIMIT

Dear Mr. Schwencer:

Your letter of March 30, 1978 requested additional information in support of our request for a 50% wastage steam generator tube plugging limit. Below you will find a complete response to the first question of your letter. Westinghouse, the steam generator vendor, has informed us that due to the new technical requirements imposed by questions two and three of your letter and the many different technical disciplines which must be brought together to develop a response, we must request an additional delay beyond that specified in our April 27, 1978 letter. Westinghouse estimates that an additional sixty days will be required to provide an adequate response. Therefore, our response will be transmitted to you by August 7, 1978. If the data becomes available sooner it will be submitted immediately.

Question 1

The data presented in Figures 36, 37 and 38 of Attachment I to the July 29, 1977 submittal, indicate relatively large standard deviations and instances of negative mean defect growth. Therefore, recalculate the mean defect growth between consecutive inspections using only those tubes with wastage of greater than 40% to the extent possible. This should minimize errors associated with the small eddy current indications. In addition to the three figures, provide a numerical tabulation of the mean and standard deviation for: 1) each of the three inspections of each generator; 2) each generator; and 3) the entire unit. Since a comparison of a significant sample of tubes must be made, it may be necessary to include tubes with defect indications of less than 40%.

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

A001
S1 10*

CP&L Response

The attached tables and graphs have been prepared to supply the additional information requested regarding the justification for a 50% plugging criteria at H. B. Robinson Unit No. 2.

Figures 1 through 4 plot the mean indication growth between consecutive inspections as a function of the later inspection, for each steam generator and for the entire unit. There were not enough comparisons to produce a meaningful sample if only those indications of $\geq$ 40% were used. Therefore, in an attempt to reduce the errors associated with small indications, but still provide a meaningful sample size, indications $\geq$ 30% were compared.

A linear regression analysis was performed on the four points plotted in each figure and the calculated lines were drawn. Note that these lines have negative slope in three of the four cases.

Tables I and II show the mean and standard deviation of these comparisons, for each steam generator at each inspection, the entire unit at each inspection and all inspections of each steam generator. The data presented in Table I are direct tube-by-tube comparisons, while those in Table II are these same comparisons normalized to represent yearly growth, i.e., each delta in the 5/74-4/75 comparison period is multiplied by 12/11 ths and each delta in the 4/75-11/75 comparison period is multiplied by 12/7 ths. Note that the average yearly growth for the entire unit, as shown in Table II, is 0.78% per year.

Yours very truly,

E. E. Utley
Senior Vice President
Power Supply

CSB/gsm
Attachments

MEAN INDICATION GROWTH BETWEEN CONSECUTIVE INSPECTIONS
AS A FUNCTION OF THE DATE OF THE LATER INSPECTION
AT (CPL) H B ROBINSON 2, SG-A
(ONLY INDICATIONS ≥ 30% IN BOTH INSPECTIONS ARE INCLUDED
IN THESE COMPARISONS)

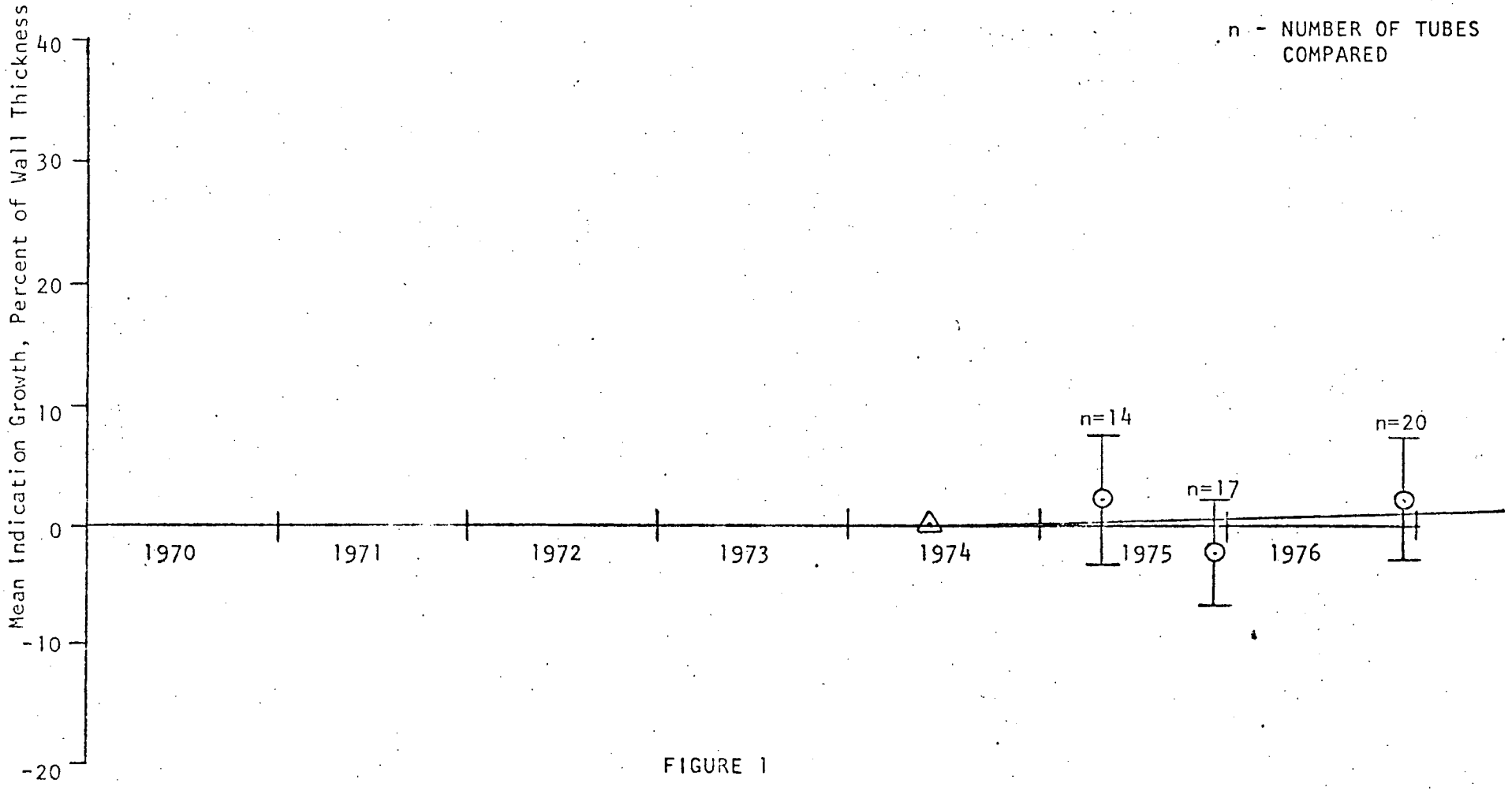

FIGURE 1

MEAN INDICATION GROWTH BETWEEN CONSECUTIVE INSPECTIONS
AS A FUNCTION OF THE DATE OF THE LATER INSPECTION
AT (CPL) H B ROBINSON 2, SG-B
(ONLY INDICATIONS ≥ 30% IN BOTH INSPECTIONS ARE INCLUDED
IN THESE COMPARISONS)

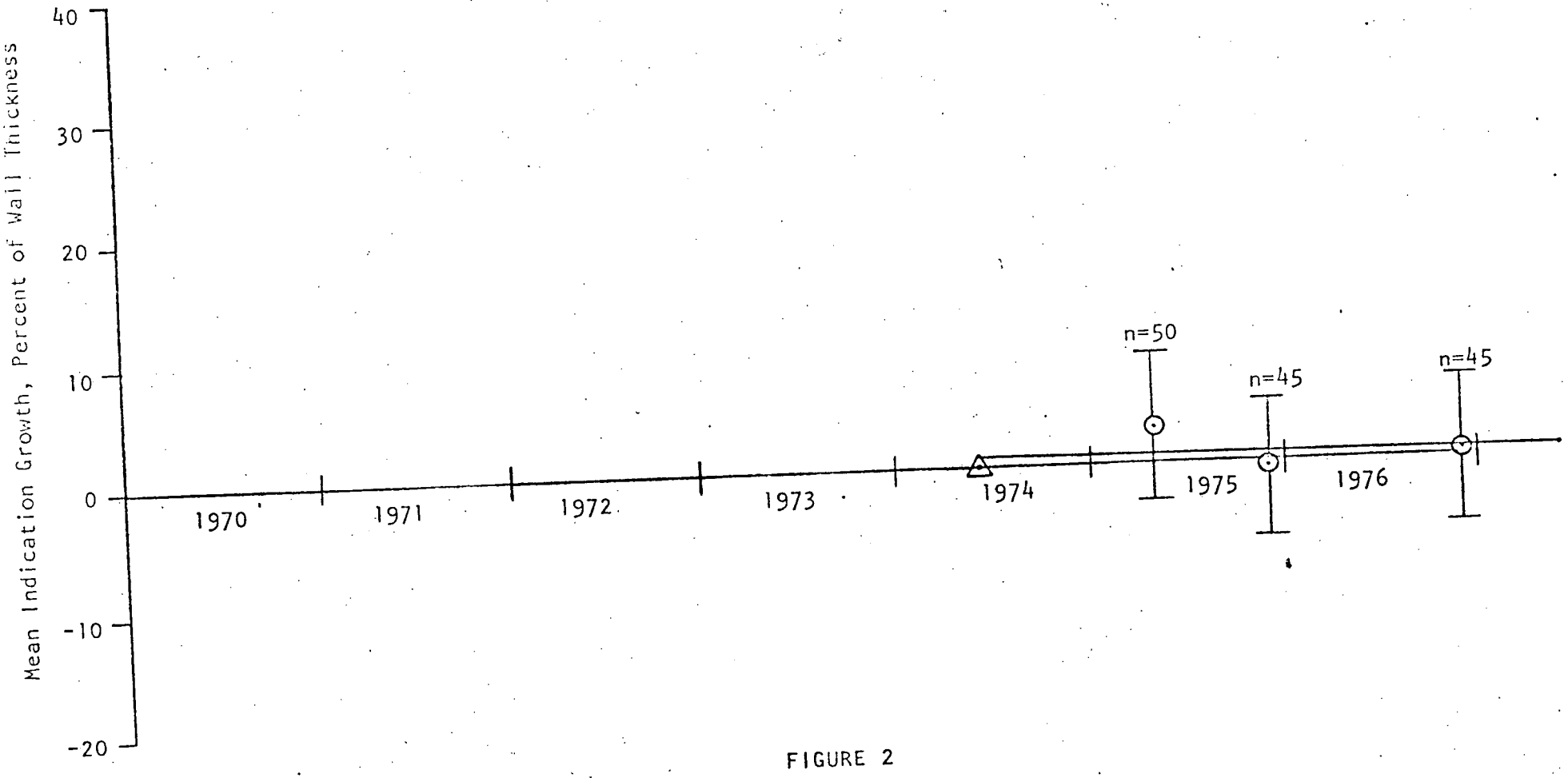

FIGURE 2

MEAN INDICATION GROWTH BETWEEN CONSECUTIVE INSPECTIONS
AS A FUNCTION OF THE DATE OF THE LATER INSPECTION
AT (CPL) H B ROBINSON 2, SG-C
(ONLY INDICATIONS $\geq$ 30% IN BOTH INSPECTIONS ARE INCLUDED
IN THESE COMPARISONS)

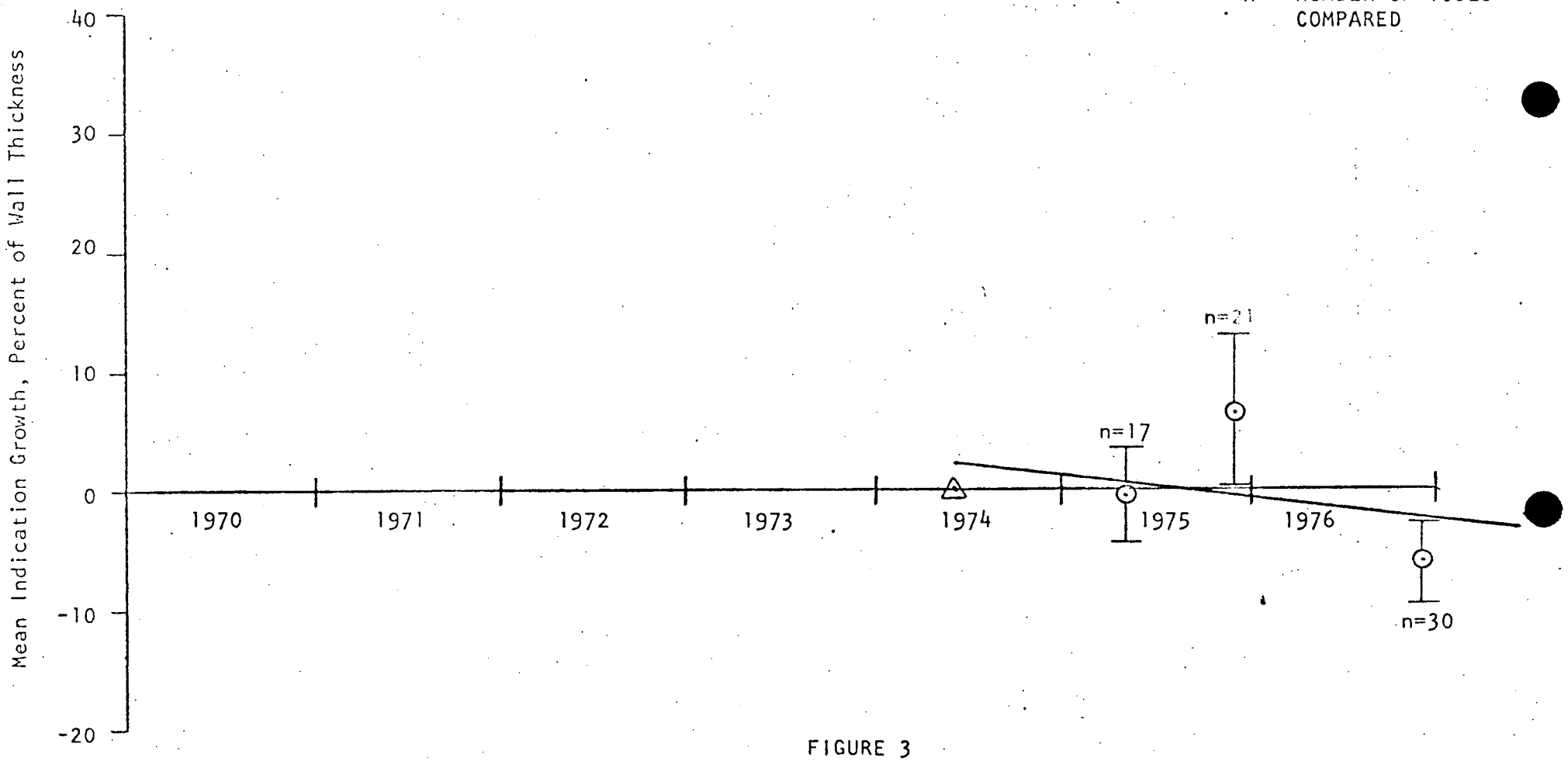

FIGURE 3

MEAN INDICATION GROWTH BETWEEN CONSECUTIVE INSPECTIONS
AS A FUNCTION OF THE DATE OF THE LATER INSPECTION
AT (CPL) H B ROBINSON 2, ALL SG'S COMBINED
(ONLY INDICATIONS $\geq$ 30% IN BOTH INSPECTIONS ARE INCLUDED
IN THESE COMPARISONS)

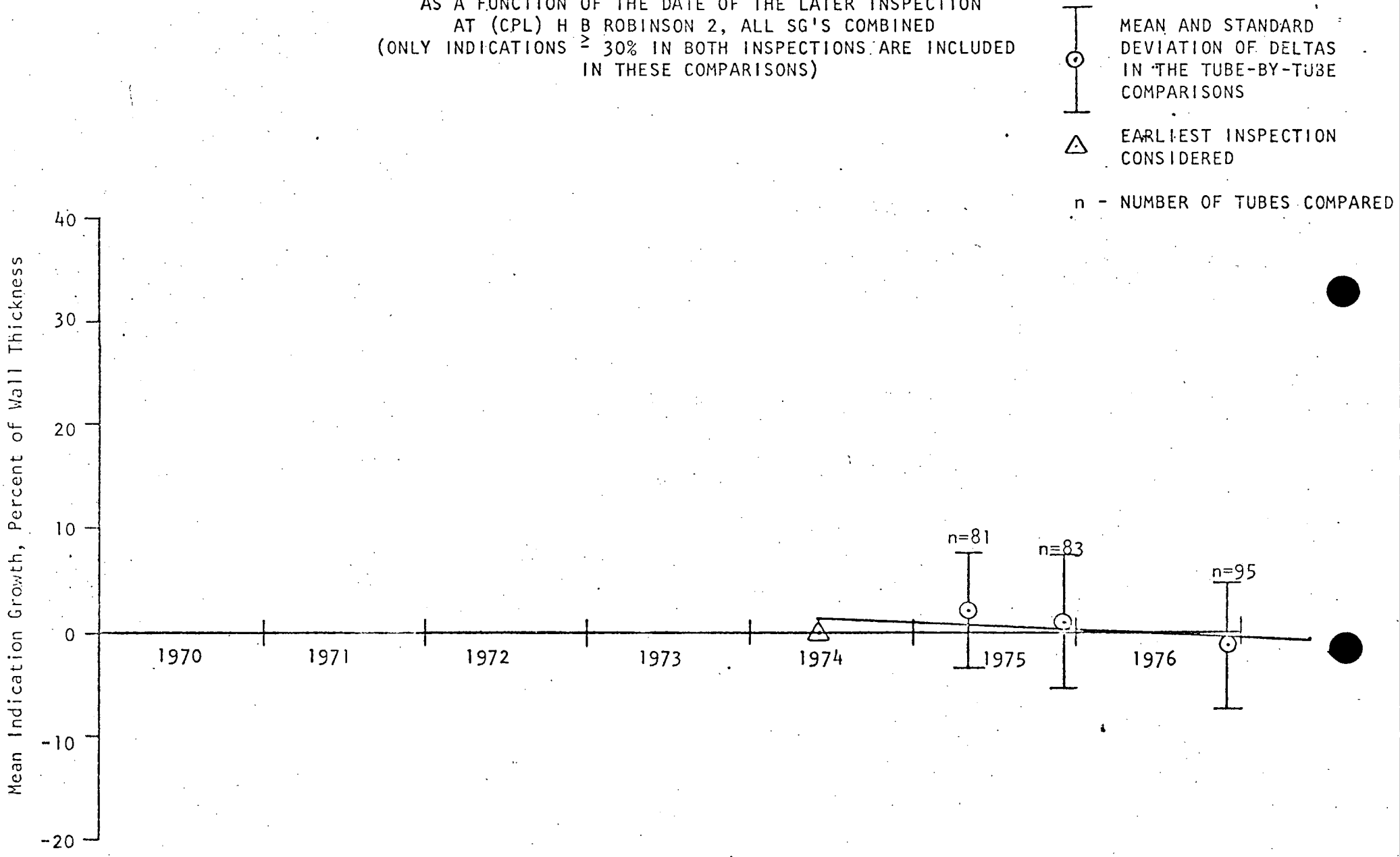

FIGURE 4

TABLE I

DIRECT COMPARISONS OF EDDY CURRENT INDICATIONS
BETWEEN CONSECUTIVE INSPECTIONS
(ONLY INDICATIONS ≥ 30% IN BOTH INSPECTIONS ARE COMPARED)

	5/74-4/75 Comparison			4/75-11/75 Comparison			11/75-11/76 Comparison			All Comparisons Combined		
SG	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED
A	2.07	5.31	14	-2.29	4.47	17	2.15	5.04	20	0.65	5.27	51
B	3.10	5.93	50	-0.47	5.66	45	0.44	6.02	45	1.10	6.03	140
C	-0.41	4.05	17	6.57	6.38	21	-6.20	3.37	30	-0.81	7.15	68
ALL SG'S COMBINED	2.19	5.60	81	0.94	6.51	83	-1.29	6.11	95	0.51	6.24	259

TABLE II

DIRECT COMPARISONS OF EDDY CURRENT INDICATIONS
BETWEEN CONSECUTIVE INSPECTIONS
"NORMALIZED" TO REPRESENT 12 MONTHS GROWTH
(ONLY INDICATIONS ≥ 30% IN BOTH INSPECTIONS ARE COMPARED)

	5/74-4/75 Comparison			4/75-11/75 Comparison			11/75-11/76 Comparison			All Comparisons Combined		
SG	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED	MEAN	STANDARD DEVIATION	NUMBER OF INDICATIONS COMPARED
A	2.26	5.79	14	-3.93	7.66	17	2.15	5.04	20	0.15	6.76	51
B	3.38	6.47	50	-0.81	9.70	45	0.44	6.02	45	1.09	7.69	140
C	-0.45	4.42	17	11.26	10.94	21	-6.20	3.37	30	0.60	9.99	68
ALL SG'S COMBINED	2.39	6.11	81	1.61	11.61	83	-1.29	6.11	95	0.78	8.17	259