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SUBJECT: Forwards util reactor bldg tendon surveillance rept,per Tech  
 Spec 4.4.2 re tendon inservice insps.

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March 29, 1988

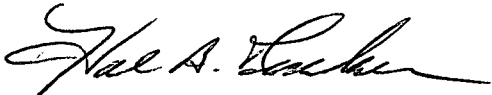
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Subject: Oconee Nuclear Station, Unit 3  
Docket No. 50-287  
Tendon Surveillance Report

Gentlemen:

Pursuant to Oconee Nuclear Station Technical Specification 6.6.3.g please find attached the Oconee Unit 3 Reactor Building Tendon Surveillance Report. This report is submitted to fulfill the requirements of Technical Specification 4.4.2 regarding tendon inservice inspections.

Very truly yours,



Hal B. Tucker

PJN/312/jgc

Attachment

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OCONEE NUCLEAR STATION  
UNIT 3 CONTAINMENT BUILDING  
TENDON SURVEILLANCE

SUMMARY

Containment Building tendon surveillance was performed on Oconee Unit 3 during the period March, 1987 through October, 1987 in accordance with Technical Specification 4.4.2. This was the fourth inspection for the unit, and all tendons inspected have remained in satisfactory condition. There were no significant findings.

DISCUSSION

Nine surveillance tendons were inspected for anchorage condition and post-tensioning force and, of these, one tendon in each surveillance group was detensioned for wire removal for wire condition inspection and destructive examination. These tendons were then re-stressed to the as-found configuration.

- 1) Lift-off forces remain within the acceptable range for all tendons. Lift-off readings and average lift-off force per wire are given on Tables 1 and 2. Force-time trends are shown on Figures 1 through 9.
- 2) All tendons and components remain in excellent condition. Grease coverage of components was satisfactory. No moisture was detected. No change in grease coloring or condition was noted. No significant change in corrosion level of anchorage components or wires was found. Anchorage and wire conditions are detailed in Table 3.
- 3) Tensile testing performed on wire samples removed from the designated tendons shows all wires continue to meet the requirements of ASTM A421 to which the tendons were manufactured. Test results are shown on Table 4.

CONCLUSION

Based on the results of this surveillance, the Unit 3 Containment Building post-tensioning system is in satisfactory condition and is capable of continuing to perform its intended function.

TABLE 1  
LIST-OFF FORCES  
(KIPS)

TENDON	1975	1980	1983	1987
1D28	672	689	714/706	742/723
2D28	689	671/678	658/715	723
3D28	698	675	681/728	736
23V14	727	732	745/739	748/742
45V16	703	700/707	727/704	699
61V16	707	687	705/701	717
13H9	674	726	713/713	708/705
53H10	683	678	697/710	693
51H9	678	678/760	717/713	691

- NOTES:
1. All values are the average of the values obtained at each end of the tendon.
  2. Double entries are, respectively, the as-found and as-left values for re-tensioned tendons.
  3. Lift-off forces prior to 1983 were computed from ram area. No calibration data for these years are available.

TABLE 2  
AVERAGE LIFT OFF  
FORCE PER WIRE

<u>TENDON</u>	<u>FORCE (KIPS)</u>
1D28	8.07/7.86
2D28	7.86
3D28	8.00
23V14	8.13/8.07
45V16	7.60
61V16	7.79
13H9	7.70/7.66
53H10	7.62
51H9	7.51

TABLE 3

## TENDON COMPONENT CONDITION

<u>TENDON</u>	<u>WIRES</u>	<u>BUTTONHEADS</u>	<u>WASHERS</u>	<u>SHIMS</u>	<u>BEARING PLATE</u>
1D28	A	A	B	B	B
2D28	N/A	A	B	B	B
3D28	N/A	A	B	B	B
13H9	A	A	A	A	A
51H9	N/A	A	B	B	B
53H10	N/A	A	A	A	B
23V14	A	A	B	B	B
45V16	N/A	A	B	B	B
61V16	N/A	A	B	B	B

CORROSION LEVELS

- A Bright metal, no visible oxidation
- B Reddish brown color, no pitting
- C  $0 \leq \text{Pitting} \leq .003''$
- D  $.003'' \leq \text{Pitting} \leq .006''$
- E  $.006'' \leq \text{Pitting} \leq .010''$

TABLE 4  
TENDON WIRE SAMPLES  
TENSILE DATA

ID/Location	Diameter	% Elongation (8 in. Gage)	Maximum Load (lbs.)	Ultimate Strength (PSI)
1D28-Top	.2503"	5.63	12,400	253,100
1D28-Top	.2501"	5.00	12,410	253,300
1D28-Center	.2501"	5.25	12,365	252,400
1D28-Center	.2500"	4.50	12,340	251,900
1D28-Bottom	.2501"	6.00	12,350	252,100
1D28-Bottom	.2500"	5.00	12,890	252,900
23V14-Field end	.2501"	5.87	12,720	259,600
23V14-Field end	.2502"	(1)	12,680	258,800
23V14-Middle	.2501"	6.00	12,640	258,000
23V14-Middle	.2505"	6.88	12,640	258,000
23V14-Shop end	.2504"	6.25	12,560	256,400
23V14-Shop end	.2504"	6.25	12,560	256,400
13H9-Field end	.2503"	5.75	12,700	259,200
13H9-Field end	.2501"	6.88	12,680	258,800
13H9-Middle	.2505"	6.88	12,680	258,800
13H9-Middle	.2504"	6.00	12,660	258,400
13H9-Shop end	.2504"	6.13	12,590	257,000
13H9-Shop end	.2504"	5.75	12,560	256,400

(1) Specimen broke outside of gage marks.

NOTE: Testing performed by Duke Power Company Physical Science Center

# AVERAGE LIFTOFF FORCE PER WIRE - KIIPS

1D28

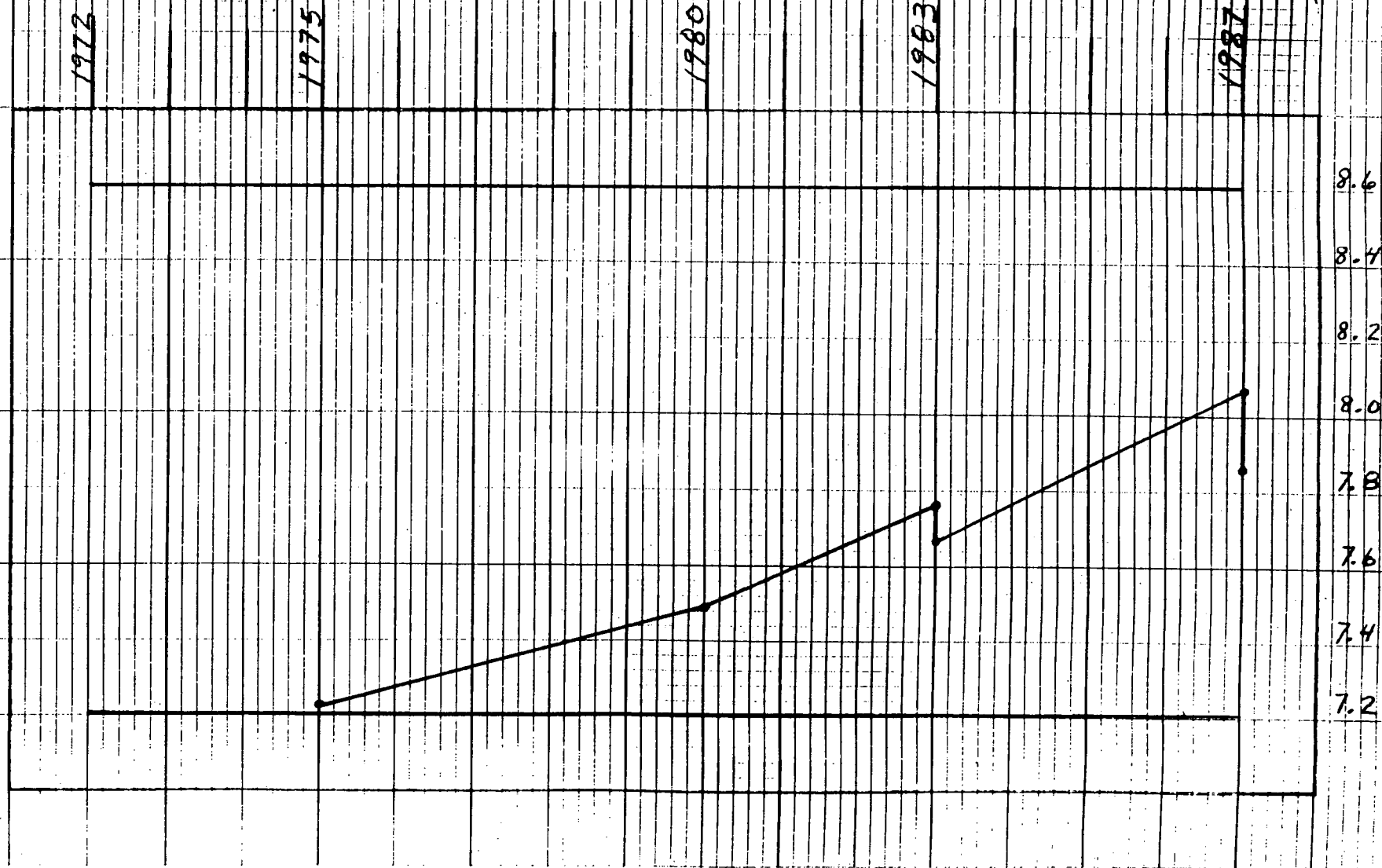


FIGURE 1



AVERAGE LIFTOFF FORCE PER WIRE - KIPS

2028

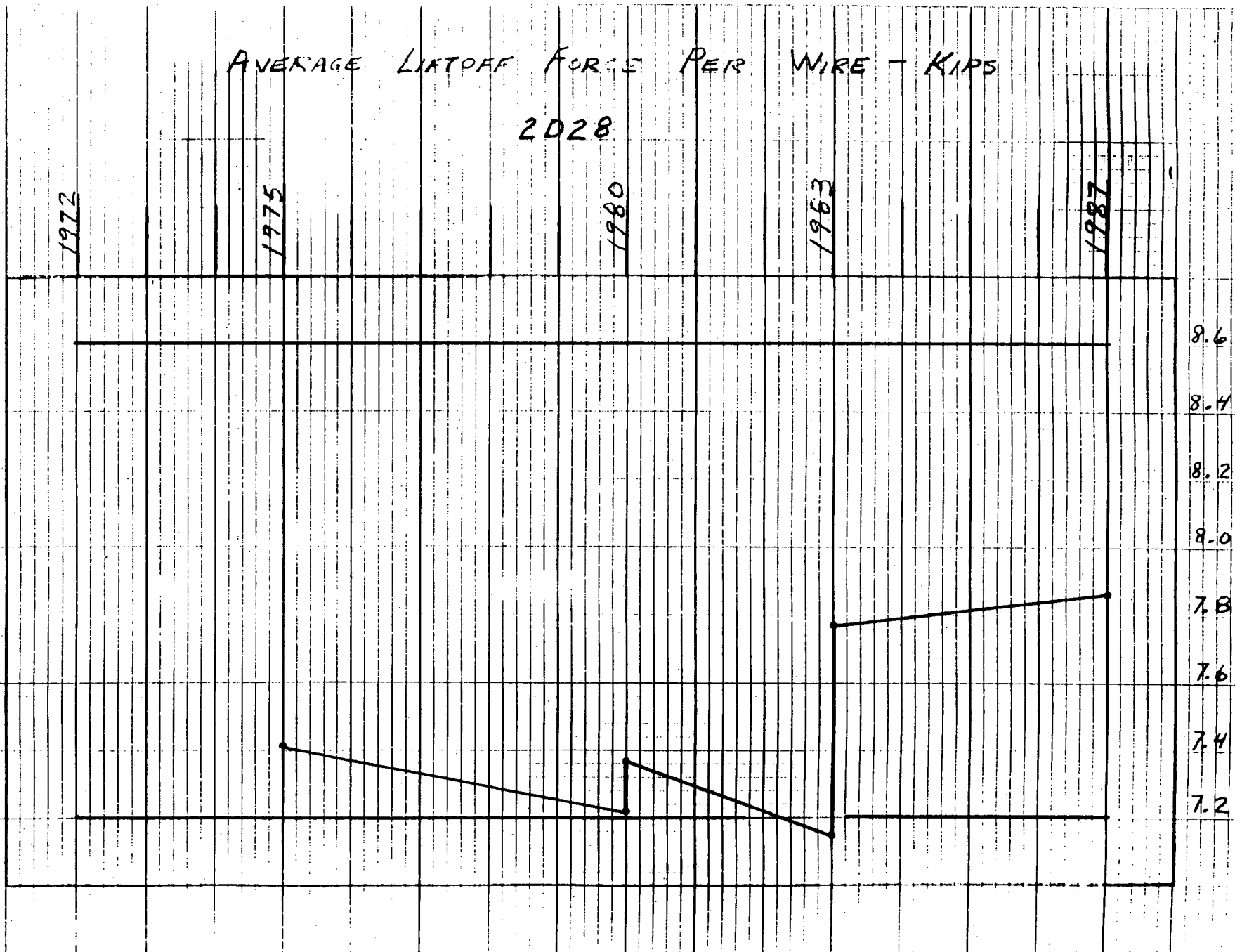


FIGURE 2

# AVERAGE LIFTOFF FORCE PER WIRE - KIPS 3D28

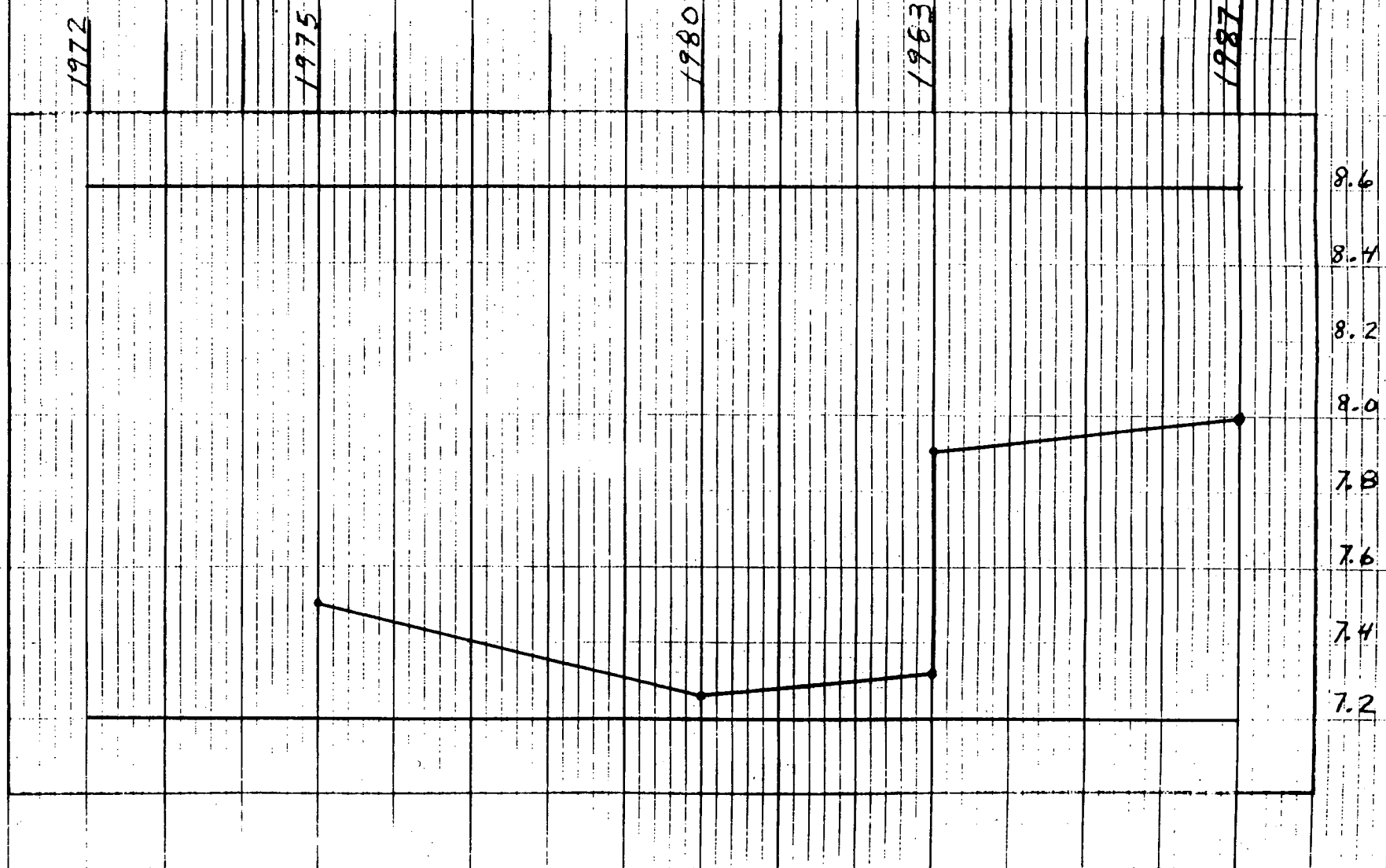


FIGURE 3

AVERAGE LIFT-OFF FORCE PER WIRE - KIPS

23 V14

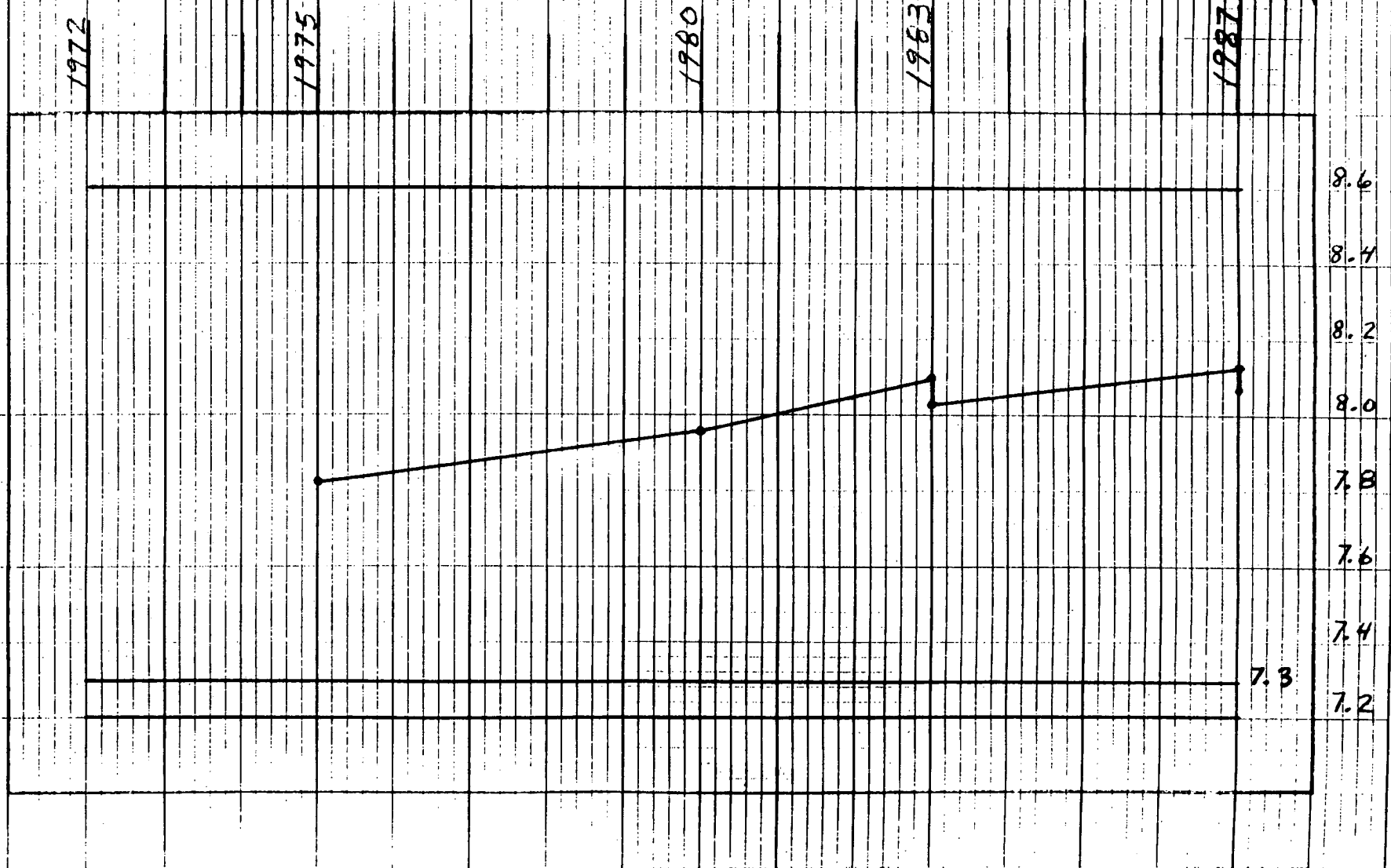


FIGURE 4



# AVERAGE LIFT OFF FORCE PER WIRE - KIPS

61 V16

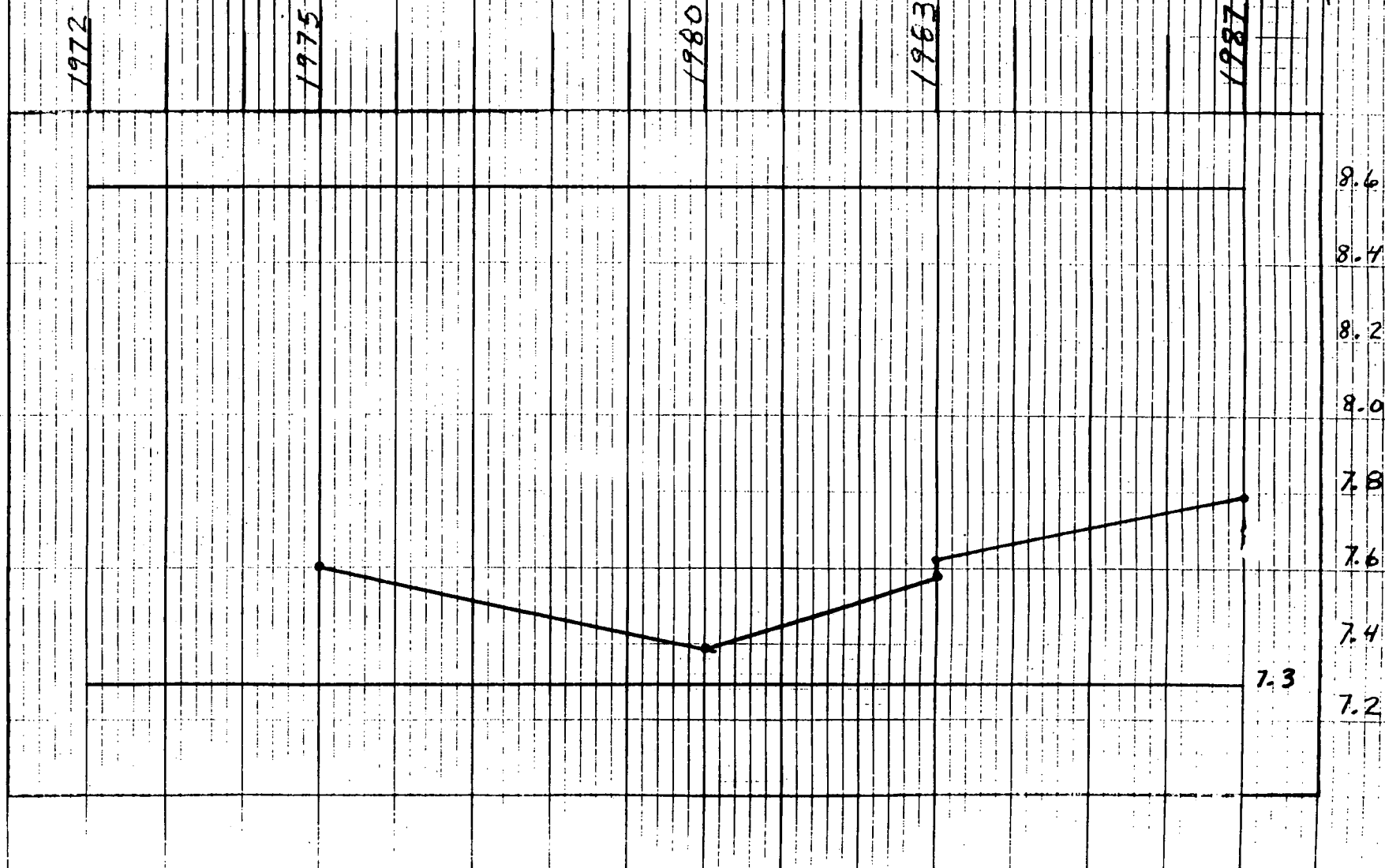


FIGURE 6

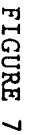
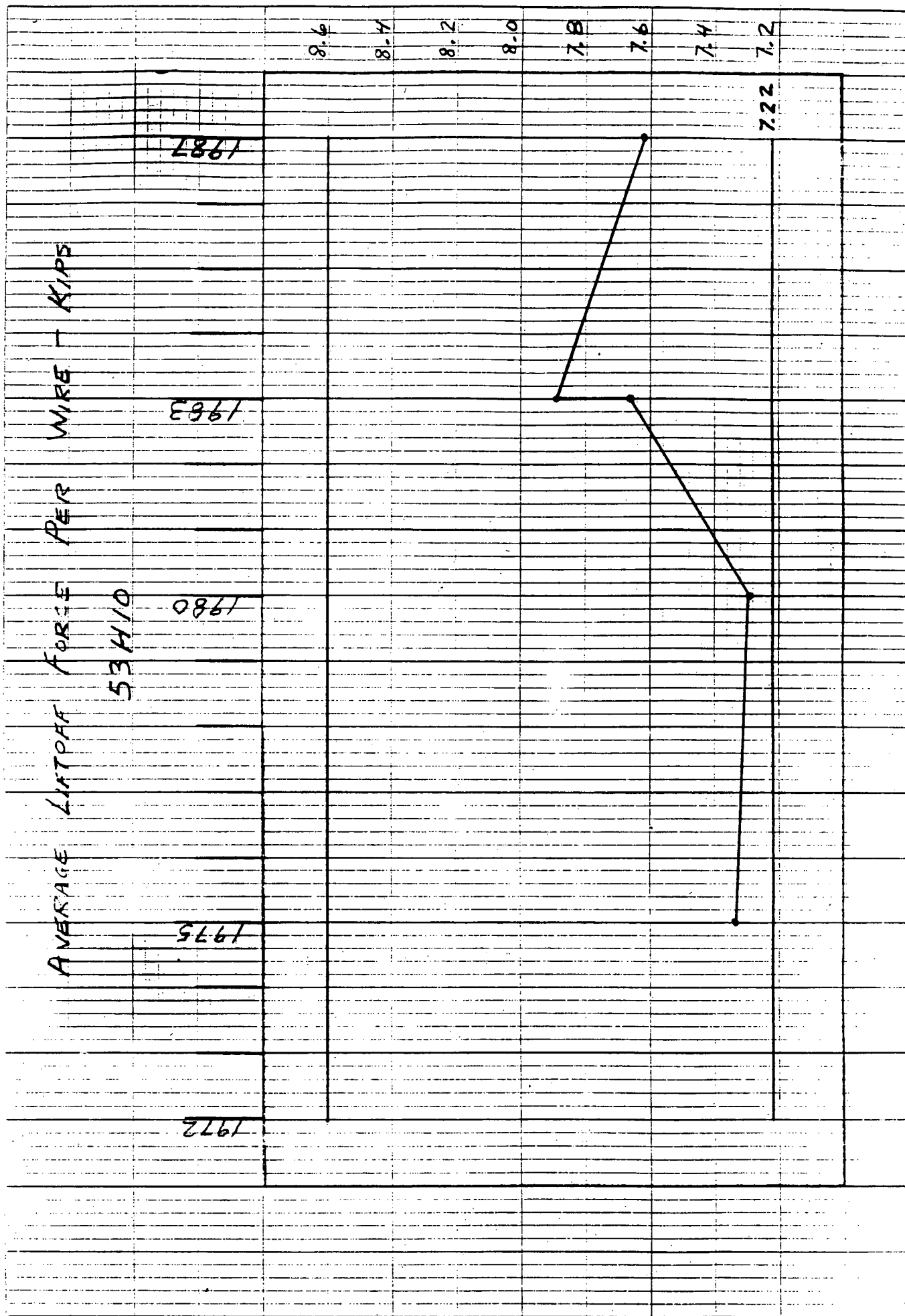


FIGURE 8



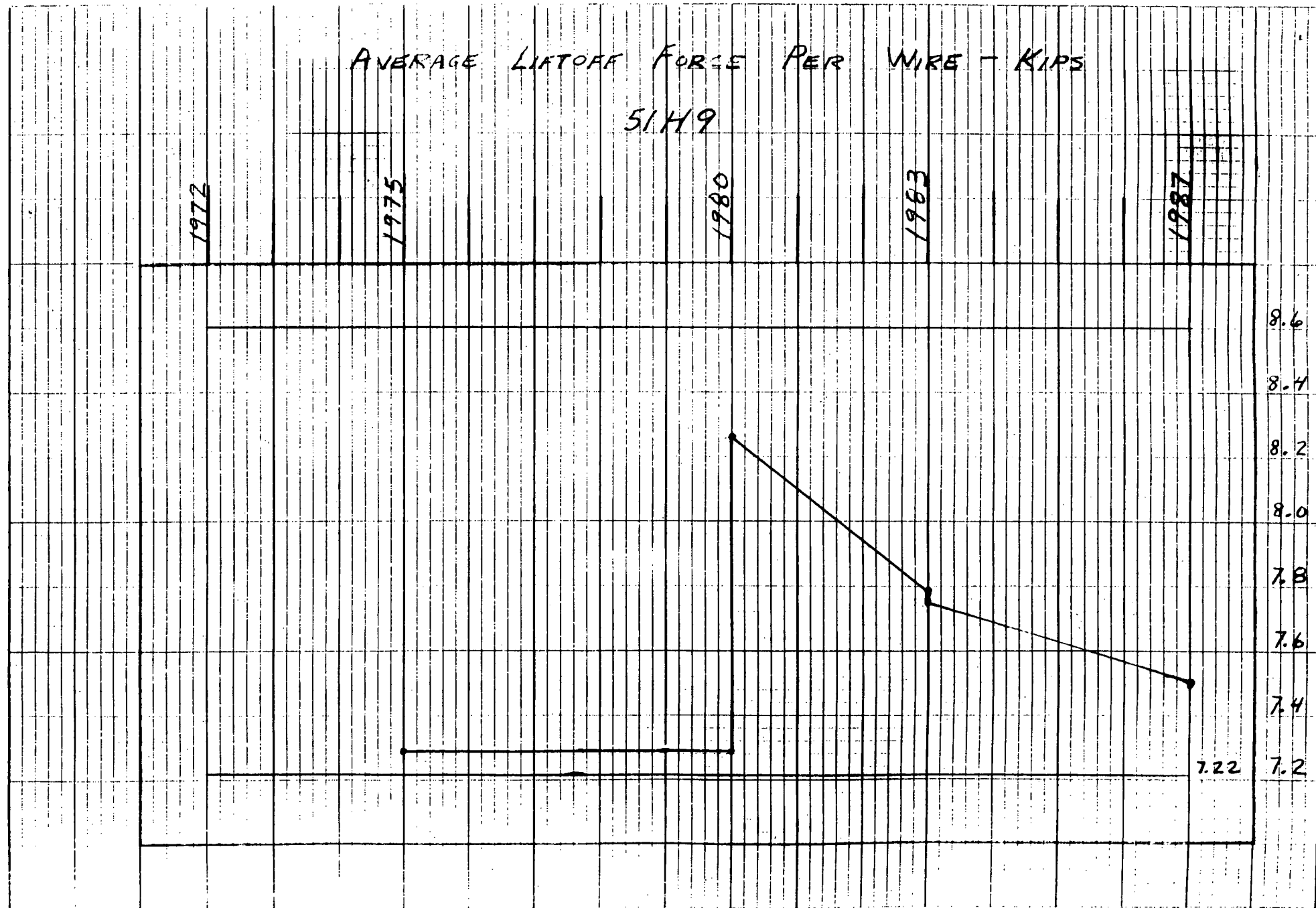


FIGURE 9