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**AIRCRAFT COMPATIBILITY AND
EVALUATION OF THE
MARK 7 MID 3 ARRESTING GEAR
(7 June 1967 through 24 June 1968)**

**Final Report
7 August 1968**

by

**Lawrence M. Theriault
Aircraft Division**

and

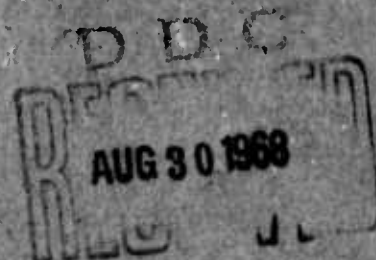
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**Prepared under Naval Air Systems Command
AIRTASK Numbers A05-537-014/204/1/W-4503-08, Work Unit No. 56 and
A05-537-007/204/1/W-4503-05, Work Unit No. 02**

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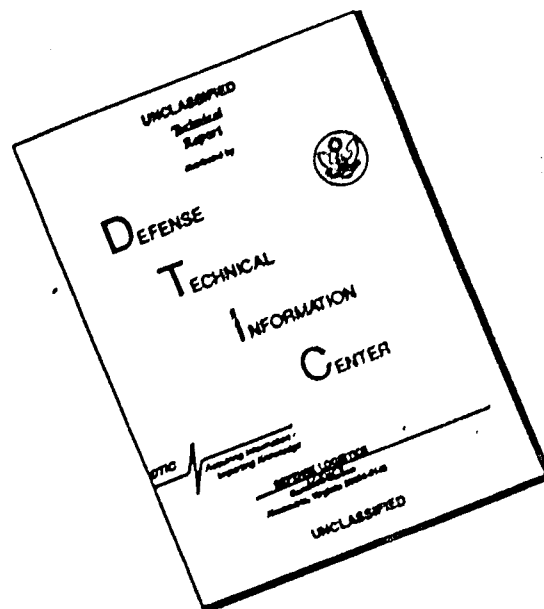
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ABSTRACT

This report presents results of tests conducted with the Mark 7 Mod 3 arresting gear to determine aircraft compatibility and evaluate arresting-gear performance. Instrumented A-3A, A-4B, F-4A, and F-8D aircraft were utilized in the test program. Test data was obtained for use in the preparation of aircraft recovery bulletins for the USS JOHN F. KENNEDY (CVA67) and to insure compatibility of current fleet aircraft with the Mark 7 Mod 3 arresting gear.

Testing was conducted with three basic arresting-gear configurations/operating modes: (1) arresting gear with sheave dampers, using actual weight settings; (2) arresting gear without sheave dampers, using actual weight settings; and (3) arresting gear with sheave dampers, using single weight settings.

Compatibility with A-3A and A-4B aircraft and qualified compatibility with F-4A and F-8D aircraft has been established.

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I INTRODUCTION

A. The Naval Air Test Facility (Ship Installations) (NATF(SI)) was authorized by references (a) and (b) to conduct tests with the Mark 7 Mod 3 arresting gear to determine aircraft compatibility and evaluate arresting-gear performance. Aircraft testing commenced on 7 June 1967, and concluded on 24 June 1968. Instrumented A-3A, A-4B, F-4A, and F-8D aircraft were used for a total of 244 arrestments.

B. The purpose of the test program was to obtain arresting-gear performance data required to prepare aircraft Recovery Bulletins, and to insure compatibility of current fleet aircraft with the Mark 7 Mod 3 arresting gear.

II TEST EQUIPMENT AND PROCEDURES

A. Arresting-Gear Configurations: The Mark 7 Mod 3 arresting gear at NATF(SI) was utilized for all test events, and was configured as follows:

1. Reeving: 1-3/8-inch-diameter regular Lang-lay purchase cable, NAEC PN A-92791-27, with an 18:1 reeve ratio
2. Deck span: 120 feet with crossdeck pendant, PN 507306-110-0
3. Cam: K-31
4. Weight-selector dial: NAEC PN 316152-1
5. 28-inch-diameter fairlead sheave
6. Cam-chain initial tension: 400 pounds
7. Accumulator initial pressure: 400 psi
8. Cam torque: 90 ± 20 foot-pounds
9. Port and starboard sheave dampers, configured as follows:
 - a. Control-flow orifice, damper end: 3 inches in diameter
 - b. Return-flow flapper orifice, damper end: 3/8 inch in diameter
 - c. Return-flow flapper orifice, accelerator end: 1/2 inch in diameter
 - d. Damper accumulator initial pressure: 750 psi
 - e. Accelerator accumulator initial pressure: 20 psi
 - f. Fluid levels in the damper and the accelerator accumulator: 2 inches
10. Port and starboard anchor dampers were configured as follows:
 - a. Control-flow orifice, operating end: Inner reeve, 2 inches in diameter
Outer reeve, 7/8 inch in diameter

- b. Return-flow flapper orifice, operating end: 1/2 inch in diameter
- c. Buffer control flow orifice: 5/8 inch in diameter
- d. Damper piston rod, operating end (steel): 3-7/8 inches in diameter
- e. Operating piston, PN 410295-1

B. Aircraft Configurations: Aircraft external stores configurations were as indicated on the tabulated data sheets, Appendix B, and are summarized as follows:

<u>Aircraft</u>	<u>Configuration</u>
A-3A	Clean
A-4B	300-gallon centerline and two 300-gallon wing tanks
F-4A	(1) clean (2) two 370-gallon wing tanks (3) 600-gallon centerline and two 370-gallon wing tanks
F-8D	Clean

C. Test Operating Modes

1. Aircraft tests were programmed to provide aircraft recovery-bulletin data for three basic Mark 7 Mod 3 arresting-gear configurations/operating modes:

- a. Arresting gear with sheave dampers
- b. Arresting gear without sheave dampers
- c. Arresting gear with sheave dampers, using a single weight setting

2. The following arresting-gear weight settings were utilized during the single-weight-setting tests:

<u>Aircraft</u>	<u>Weight Setting (Lb)</u>
A-3A	50,000
A-4B	14,500
F-4A	38,000
F-8D	25,000

3. Aircraft tests were conducted over the minimum to maximum shipboard arrested-landing-weight ranges of each aircraft for both ON-CENTER and 20-foot OFF-CENTER engaging positions.

D. Power Programming: The following power programming was used in an effort to insure that aircraft power was at military rated thrust (MRT) at wire pickup. By simulating the most stringent aircraft power conditions normally encountered during fleet recovery operations, this test procedure produces the maximum arresting-hook axial loads which normally occur.

1. Fly-in arrestments: Advance power to MRT as the aircraft touches down.

2. Roll-in and taxi-in arrestments: Advance power early enough in the approach to ensure that the engine(s) are at MRT at wire pickup.

3. Upon completion of landing roll out, reduce power to IDLE. Allow the aircraft to roll aft until the arresting-hook point clears the deck pendant.

E. Frequency Response: Data presented in this report is displayed at the following flat frequency responses:

<u>Parameter</u>	<u>Flat Frequency Response (Hz)</u>
Arresting-hook axial load	60
Aircraft longitudinal deceleration	20
Arresting-gear cable tensions	
A-3 (Tabulated data - Appendix B)	60
A-3 (Performance comparison - Figures 21 through 23)	60, 160 and 330
A-4, F-4, and F-8 (Tabulated data - Appendix B)	330
A-4, F-4, and F-8 (Performance comparison - Figures 24 through 29)	60 and 330
Arresting-gear cylinder pressure	600
Aircraft engine RPM	5

III TEST RESULTS AND DISCUSSION

A. Test Data: Values of aircraft arresting-hook axial loads, aircraft longitudinal decelerations, arresting-gear cable tensions, and arresting-gear engine-cylinder pressures were obtained by reducing data on a digital computer.

1. Plots of the peak aircraft and arresting-gear performance parameters listed above versus engaging speed are presented in Figures 1 through 16.

2. Performance parameters listed above have been plotted against time and stroke for representative events and are presented in Appendix A.

3. Tabulated data for each test event is presented in Appendix B.

B. Test Results

1. The maximum allowable aircraft engaging speed for each aircraft and arresting-gear parameter for both ON-CENTER and 20-foot OFF-CENTER arrestments are listed in Table I. These limits are based on the speed required to obtain the maximum allowable values for the parameters listed and have been obtained either directly or extrapolated from the test data presented in Figures 1 through 16. Mark 7 Mod 3 arresting-gear performance is satisfactory within these limits.

TABLE I

Aircraft Type	Weight Range (1,000 Lb)	Arresting- Gear Config/Mode*	Maximum Engaging Speed (Knots)			
			ON-CENTER/20-Foot		OFF-CENTER	
			Arresting- Hook Axial Load	Long. Decel	Cable Tension	Engine- Cylinder Pressure
A-3A	48.0 - 50.0	WSD	137/133	153/149	130/118	132/128
		W/O SD	137/133	153/149	130/118	132/128
	40.0 - 42.0	WSD	156/146	158/153	145/130	145/137
		SWS-WSD	150/145	151/146	141/133	141/138
		W/O SD	151/143	152/144	142/130	142/136
A-4B	13.5 - 14.5	WSD	138/133	145/140	160/157	170+/170+
		W/O SD	124/134	131/135	143/138	170+/170+
	11.5 - 12.5	WSD	142/137	142/135	158/162	170+/170+
		SWS-WSD	140/135	140/133	169/165	170+/170+
		W/O SD	124/134	123/134	147/138	170+/170+
F-4A	31.0 - 33.0	WSD	133/129	145/140	151/140	152/149
		SWS-WSD	131/126	133/128	155/147	153/149
		W/O SD	130/125	130/125	139/130	149/146
F-8D	20.0 - 22.0	WSD	156/159	160/163	163/168	170+/170+
		SWS-WSD	163/161	167/165	170/167	170+/170+
		W/O SD	150/148	155/153	140/134	170+/170+

* WSD = with sheave dampers; W/O SD = without sheave dampers; SWS-WSD = single weight setting, with sheave dampers.

2. Table I shows that aircraft maximum allowable engaging speeds, based on any one of the four parameters evaluated, are usually lower for 20-foot OFF-CENTER arrestments than those for ON-CENTER arrestments. For heavyweight A-3A (48,000 to 50,000 pounds) aircraft arrestments 20 feet OFF-CENTER, arresting-gear cable tension is the critical parameter (96,000-pound tension limit) and it imposes a 10-knot reduction in engaging speed as determined by the next most critical parameter, arresting-gear engine-cylinder pressure (10,000-psi limit). Extrapolation of A-3A/Mark 7 Mod 3 purchase-cable tension data indicates that this 10-knot loss in engaging speed could be regained if the cable-tension limit were extended to 110,000 pounds for 20-foot OFF-CENTER arrestments.

a. A review of references (c), (d), and (e), Statistical Presentations of Landing Parameters, indicates that shipboard landings of various type aircraft 20 feet OFF-CENTER constitutes a rare event. Consideration of the functional relationships among engaging speeds, cable tensions, and OFF-CENTER distances along with the probabilities of landing at various OFF-CENTER distances, the cable-tension safety factor, and cable fatigue life could provide aircraft recovery-bulletin cable-tension limits close to the ON-CENTER limits of Table I.

3. When the arresting gear was configured without sheave dampers, higher aircraft and arresting-gear loads were recorded during arrestments of all aircraft tested except the A-3. Loads recorded during arrestments of the heavyweight (48,000 to 50,000 pounds) A-3 aircraft were identical to those obtained when the gear was configured with sheave dampers.

4. Review of single-weight-setting and actual weight setting test data indicates that the present Mark 7 Mod 3 arresting-gear weight setting dial is not well matched to all aircraft types tested. It is reasoned that an optimum arresting-gear weight setting dial should consistently provide somewhat lower recovery loads (higher allowable engaging speeds) for actual weight settings than for single-weight settings. For the F-8 aircraft the opposite is generally true, that is, for ON-CENTER tests the maximum allowable engaging speed, based on either hook load or cable tension (Table I), is seven knots lower for actual than for single-weight settings. A further indication of an arresting-gear weight dial mismatch to individual aircraft types is evidenced by the arresting-gear pressure/stroke histories of Appendix A. Comparison of single and actual weight setting pressure/stroke histories for each aircraft type tested shows the following:

a. F-8 Aircraft: The cylinder pressure peaks toward the end of the stroke (underset condition) when using actual aircraft weight setting, but is approximately constant (on-setting condition) for the single weight setting.

b. F-4 Aircraft: The cylinder pressure peaks toward the end of the stroke (underset condition) when using the actual weight setting, and shows a slight peaking in the beginning of the stroke (slight overset condition) for the single weight setting.

c. A-3 Aircraft: For lightweight (41,000 pounds) aircraft arrestments, the cylinder pressure peaks toward the end of the arrestment (slight underset condition) when using the actual weight setting, and peaks in the beginning of the stroke (overset condition) for the single weight setting. For heavyweight (50,000 pounds) aircraft arrestments the cylinder pressure is fairly uniform from pressure buildup to pressure drop-off (on-setting condition).

d. A-4 Aircraft: For lightweight (12,000 pounds) aircraft arrestments the cylinder pressure tends to peak just after pressure buildup (very slight overset) for both single weight setting and actual weight setting, and for heavyweight (14,000 pounds) aircraft arrestments cylinder pressure is uniform (on-setting condition) from pressure buildup to drop-off.

5. The demonstrated arresting-gear capacity of 44.2 million foot-pounds based on a 10,000-psi limiting engine-cylinder pressure, or 43.0 million foot-pounds based on a 96,000-pound limiting cable-tension load,

is less than the design goal of 47.5 million foot-pounds. Some improvement in performance could be obtained by the development of a new cam with an increased pressure rise rate to allow more aircraft energy to be absorbed earlier in the stroke. The present K-31 cam is less than optimum; however, it is acceptable for initial use with the Mark 7 Mod 3 in the fleet.

C. Aircraft Performance

1. The F-8 aircraft arresting hook became disengaged from the crossdeck pendant during high-speed (approximately 140 knots) OFF-CENTER arrestments into the Mark 7 Mod 3 arresting gear configured without sheave dampers (events 23099, 23100, 23101, 23108, and 23109). Review of high-speed camera coverage for each event revealed that the crossdeck pendant was seated in the hook-point throat just prior to pendant shedding. (See Figure 17, view A.) It appears that the transverse wave (kink wave) reflected from the closest deck sheave twisted the hook shank 30 to 40 degrees, causing the crossdeck pendant to shed from the hook point (see Figure 17, views B and C). Figure 18 is a sample time history showing the oscillations in arresting-hook, longitudinal-deceleration, and cable-tension loads that occur when the hook twists and sheds the pendant. During event 23109, the arresting-hook up-latch mechanism bumper pad and overtravel stop were damaged when the hook impacted the fuselage while twisted approximately 40 degrees (see Figure 17, view C); view D of Figure 17 shows the broken bumper pad that damaged the tail section of the aircraft during the following event. Additional arrestments (events 23250 through 23265) were conducted into the arresting gear configured with sheave dampers, using both actual and single weight settings, to determine the extent of this problem. No premature pendant shedding occurred. Only two low-speed arrestments (110 and 123 knots) were conducted into the Mark 7 Mod 3 arresting gear in this configuration. These arrestments in conjunction with Mark 7 Mod 2 arresting-gear experience indicate that premature pendant shedding probably will not occur below an engaging speed of about 120 knots. Through film analysis, the problem is considered peculiar to high-speed OFF-CENTER arrestments of the F-8 aircraft into the Mark 7 Mod 3 arresting gear configured without sheave dampers.

2. The F-8D aircraft arresting hook also became disengaged from the crossdeck pendant during event 21778--the arresting gear was configured with sheave dampers. Film coverage was not available for this event; however, analysis of the data trace indicates that pendant shedding probably occurred as a result of the aircraft porpoising at wire pickup, causing the pendant to be picked up by only the tip of the arresting-hook point.

3. The F-8D nose-gear steering stud, PN 548527-1, failed during one 20-foot-to-port arrestment (event 22079). This failure is not attributed to Mark 7 Mod 3 arresting-gear performance.

4. An excessive number of A-3 aircraft arresting-hook bumpers, PN 4545527-501, required replacement during 20-foot OFF-CENTER arrestments. Investigation of this problem revealed that the clearance between the arresting-hook-shank metal bumper, PN 3545538, and arresting-hook-well bumper was out of the specified tolerance.

5. A series of F-4A aircraft fly-in arrestments, Appendix C, were conducted to determine the incidence of aircraft stabilator/cross-deck pendant contact. Approaches were flown in accordance with NATOPS procedures and utilized a Fresnel Lens Optical Landing System set for a three-degree glide slope. Six arrestments were programmed with the arresting-hook touchdown point 60 feet before the crossdeck pendant and five arrestments with the touchdown point ten feet before the cross-deck pendant. The landing procedure consisted of the power programming listed in paragraph II D, and positioning the stick full aft at touchdown. During three of the five arrestments programmed for a ten-foot touchdown point, the crossdeck pendant struck the stabilator leading edge and inflicted minor damage. Similar contact with slotted stabilators of later-model F-4 aircraft would probably have inflicted damage requiring replacement. Analysis of motion-picture coverage indicates that stabilator/pendant contact is associated with high aircraft pitch attitude at wire pickup. A rapidly moving transverse wave in the deck pendant induced at wire pickup, travels along the pendant, rises above and strikes the stabilator leading edge which, because of aircraft attitude, is still in close proximity to the deck. Figures 19 and 20 compare an arrestment with stabilator/pendant contact to one without stabilator/pendant contact and illustrate the significance of aircraft attitude.

6. All aircraft tested exhibited acceptable tracking during the runout for both ON-CENTER and 20-foot OFF-CENTER arrestments. For 20-foot port and starboard OFF-CENTER arrestments, aircraft generally track slightly towards the centerline with a final stopped position of approximately 15 to 17 feet OFF-CENTER.

D. Frequency-Response Characteristics of Cable Tensions

1. Analysis of Mark 7 Mod 3 arresting-gear purchase-cable tensions recorded during A-3A aircraft arrestments revealed that with data obtained at the standard flat-frequency response of 330 cycles per second (Hz), an extraneous high-frequency signal greater than 600 Hz occurs in the cable-tension instrumentation (three-sheave tensiometers). This high-frequency signal is confined locally to the three-sheave-tensiometer instrumentation and is not evident in other data parameters. The signal is attributed to the interaction of the cable wrap-around angle with the three-sheave-tensiometer sheave and the external pattern of the cable weave. The extraneous high-frequency signal becomes significantly evident only for high-speed/high-energy arrestments of the A-3A aircraft.

2. The presence of an extraneous higher frequency signal in the cable-tension data is evidenced by the obscuration of the cable-tension trace (Figure 21). One serious effect of this signal is the apparent amplification of maximum cable-tension values. For manual data reduction of a cable-tension trace of a high-speed A-3 aircraft test event, the data must be "faired" (an average line drawn between the maximum and minimum values of the high-frequency oscillation) in order to eliminate the amplifying effects of the spurious higher frequency signal. For a similar data reduction conducted on a digital computer, the cable-tension values obtained are the maximum recorded values scanned by the computer and are always higher than those obtained by manual fairing.

For example, maximum cable tensions displayed by the computer for standard 330 Hz data are 3,000 to 5,000 pounds higher than those determined by manually fairing 330 Hz data. This cable-tension difference is equivalent to a loss of approximately 3 knots in maximum allowable engaging speed based on cable tension.

3. In an attempt to analyze the amplifying effects of the extraneous signal on computer-reduced cable tensions, three separate computer data reductions were conducted for the same high-speed A-3A test event (No. 21650) by filtering the basic 330 Hz data to 160 Hz and 60 Hz (Figures 21, 22, and 23). Analysis of this data indicates that filtering to 60 Hz eliminates the amplifying effects of the high-frequency signal without significant alteration of the real cable tensions. The maximum values of the 60 Hz cable-tension data are in close agreement with those obtained by manual fairing of 330 Hz data and are considered appropriate for use in establishing operational performance limits. Also, the phase shift accompanying data filtering is negligible for 60 Hz data and should have no significant effect on time correlation with other data parameters.

4. Because of the above phenomena, all cable-tension values published in this report for A-3A aircraft test events are for a flat frequency response of 60 Hz.

5. Comparison of cable-tension data for A-4, F-4, and F-8 aircraft displayed at a flat frequency response of 60 Hz with that displayed at a response of 330 Hz shows that the maximum peak values differ by up to four percent (Figures 24 to 29). This range is considered to be less than the overall accuracy of the data recording/display system. Utilization of a 60 Hz flat frequency response eliminates most of the extraneous signals (noise) from the data, which permits easier and more consistent analysis.

IV CONCLUSIONS

1. The Mark 7 Mod 3 arresting system is considered satisfactory for service use within the limits outlined by Table I. (Section III, para B1)
2. The A-3A and A-4B aircraft are compatible with the Mark 7 Mod 3 arresting gear within the engaging-speed limits outlined by Table I. (Section III, para B1 and C6)
3. The F-8D aircraft is compatible with the Mark 7 Mod 3 arresting gear configured with sheave dampers within the engaging-speed limits outlined by Table I, but is not compatible with the Mark 7 Mod 3 arresting gear configured without sheave dampers at speeds in excess of 120 knots. (Section III, para B1, C1, and C6)
4. The F-4A aircraft is compatible with the Mark 7 Mod 3 arresting gear within the engaging-speed limits outlined by Table I except that minor aircraft stabilator damage can be expected. This damage may be more severe for F-4B/J aircraft equipped with slotted stabilators. (Section III, para B1 and C5)
5. Generally, maximum allowable aircraft engaging speeds for 20-foot OFF-CENTER arrestments are lower than those for ON-CENTER arrestments. (Section III, para B2)
6. Aircraft 20-foot OFF-CENTER engaging-speed reductions based on cable tensions can be alleviated, by increasing arresting-gear purchase-cable-tension limit from 96,000 to 110,000 pounds for OFF-CENTER recovery operations in conjunction with consideration of the expected frequency of 20-foot OFF-CENTER arrestments. (Section III, para B2)
7. A new arresting-gear weight setting dial is required for improved aircraft recovery performance. (Section III, para B4)
8. Some improvement in performance could be obtained by the development of a new control-valve cam profile. (Section III, para B5)
9. Use of 60 Hz flat frequency response for all aircraft/arresting-gear cable-tension data is preferable to the use of 330 Hz flat frequency response data because it eliminates most spurious signals (noise) and facilitates more consistent data analysis. (Section III, para D)

V RECOMMENDATIONS

1. Test data provided herein, along with aircraft data to be obtained from the CVA67, should be used for the preparation of aircraft recovery bulletins for the Mark 7 Mod 3 arresting gear.
2. The F-8 aircraft should be restricted from recovery operations when the Mark 7 Mod 3 arresting gear is configured without operating sheave dampers at speeds in excess of 120 knots.
3. Aircraft-recovery-bulletin cable-tension parameter limits should be less stringent for 20-foot OFF-CENTER operations because of the rare occurrence of an operational 20-foot OFF-CENTER arrestment. A progressive increase in cable-tension limits from 96,000 pounds for ON-CENTER to 110,000 pounds for 20-foot OFF-CENTER is recommended.
4. Provide a new arresting-gear weight setting dial with proper calibration.
5. Continue development of a new control-valve cam profile.
6. Adopt the use of a 60-cycle-per-second flat frequency response for cable-tension data for all future aircraft/arresting-gear test programs.

VI REFERENCES

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Presentation of Landing Parameters for Models A-3B, A-4C/E,
F-4B, and RF-8A/F-8C Aircraft Aboard the USS MIDWAY (CVA-41)
in the WESTPAC Area
- (d) ASL Report No. NAEC-ASL-1090 of 18 Apr 1966: Statistical
Presentation of Landing Parameters for Models F-4B, F-8E,
RF-8A, A-3B, A-4C, A-4E, C-1A, and E-1B Aircraft Aboard the
USS F. D. ROOSEVELT (CVA-42) Operating Off the East Coast of
Florida
- (e) ASL Report No. NAEC-ASL-1101 of 26 Jul 1966: Statistical
Presentation of Landing Parameters for Models F-4B, A-4C,
and RA-5C Aircraft Aboard the USS INDEPENDENCE (CVA-62)
Operating in the North Atlantic

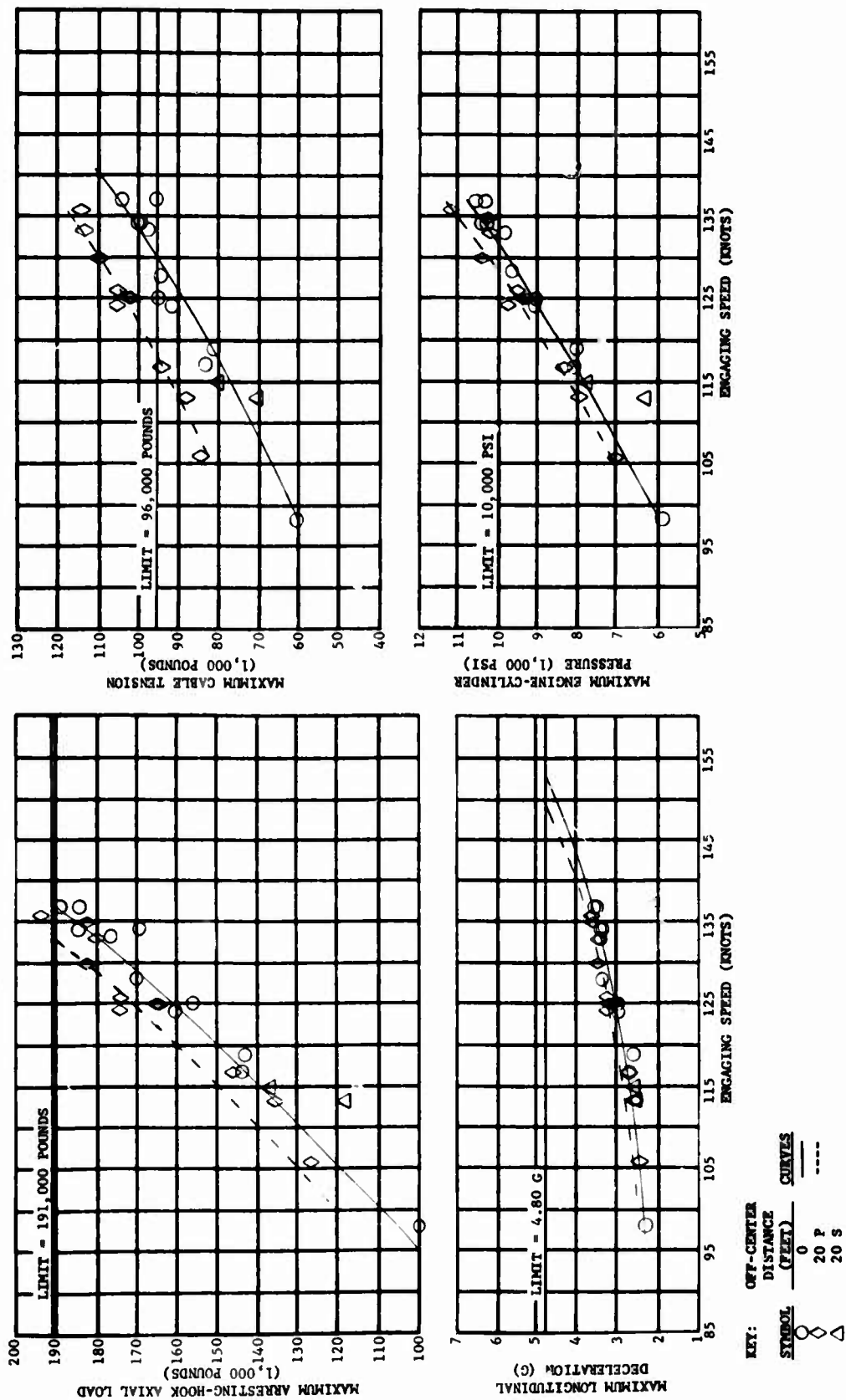
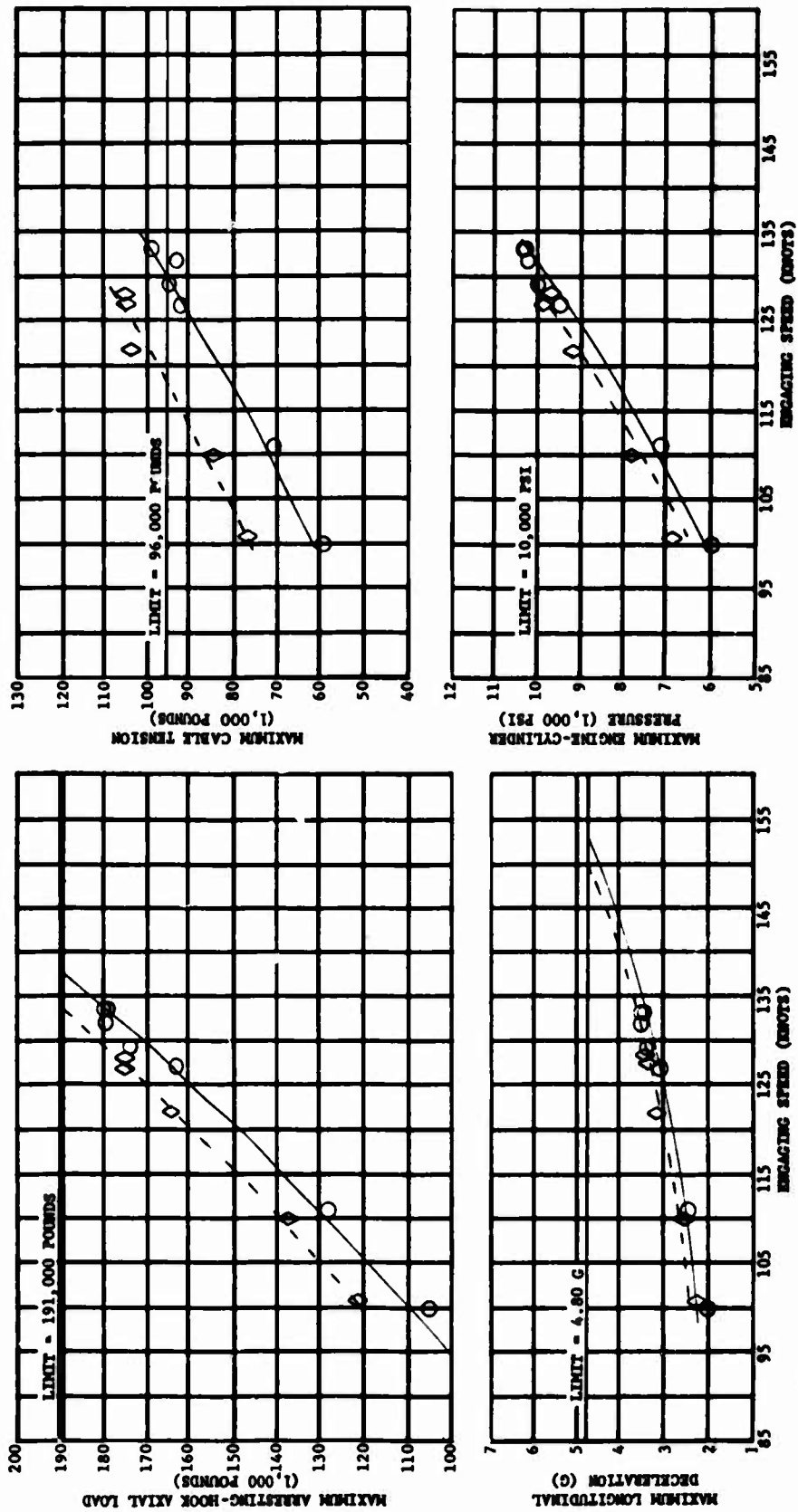


Figure 1 - Composite Graph of 48,000- to 50,000-Pound A-3A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using an Actual Weight Setting)



KEY: $\bigcirc$ OFF-CURVE
— LIMIT
--- CURVE
20 P

Figure 2 - Composite Graph of 48,000- to 50,000-Pound A-3A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers, Using an Actual Weight Setting)

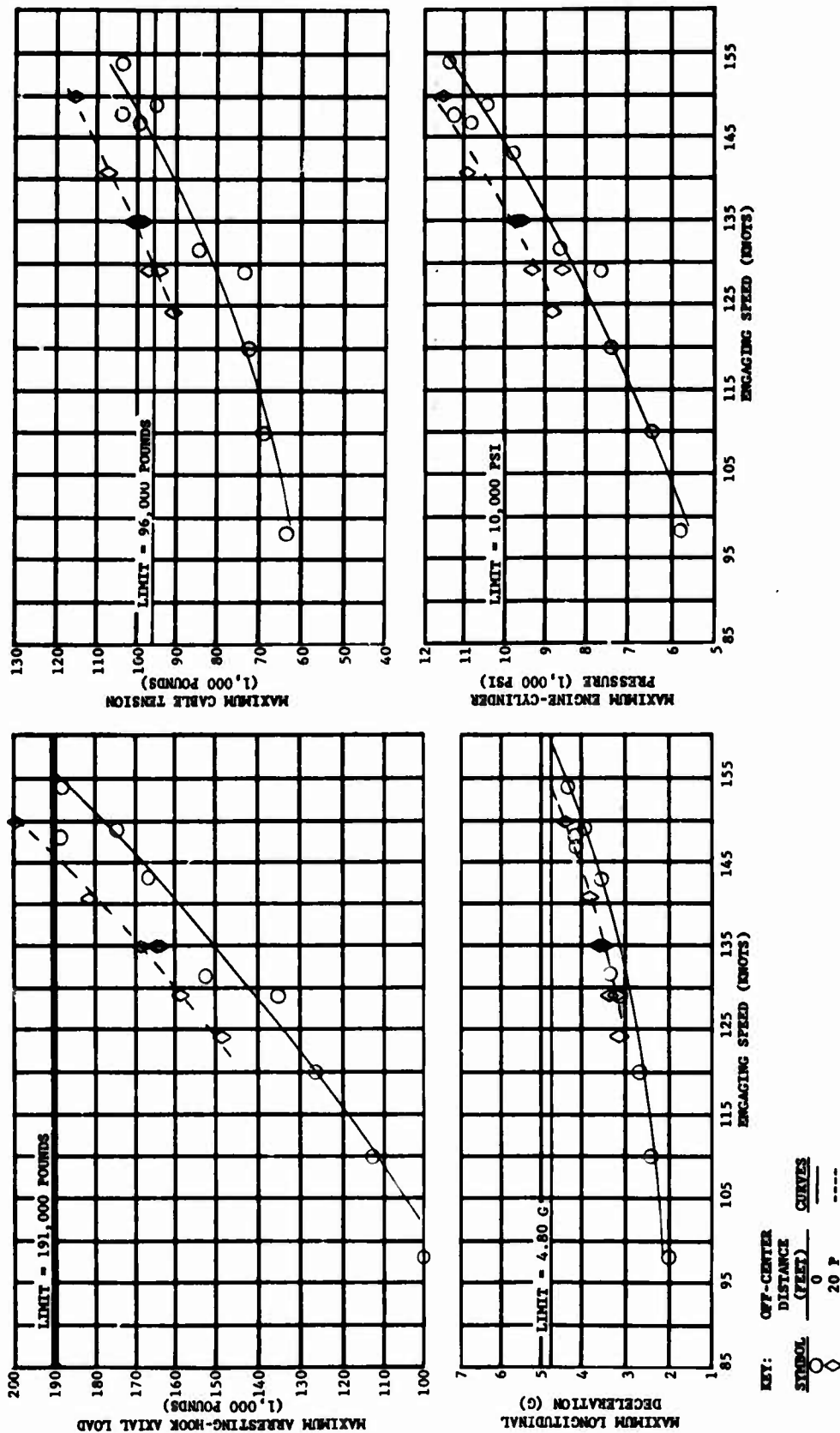


Figure 3 - Composite Graph of 40,000- to 42,000-Pound A-3A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using an Actual Weight Setting)

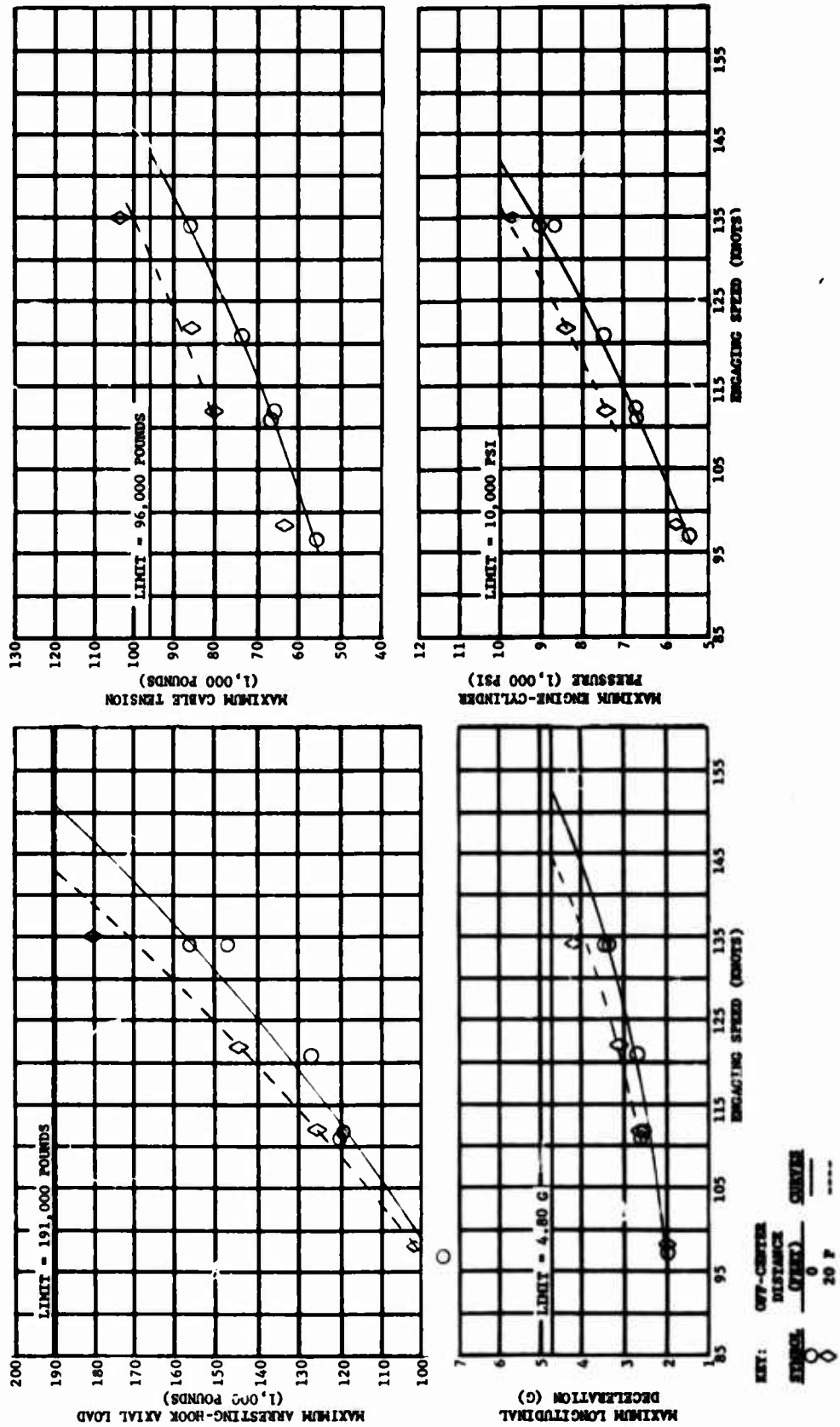


Figure 4 - Composite Graph of 40,000- to 42,000-Pound A-3A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers, Using an Actual Weight Setting)

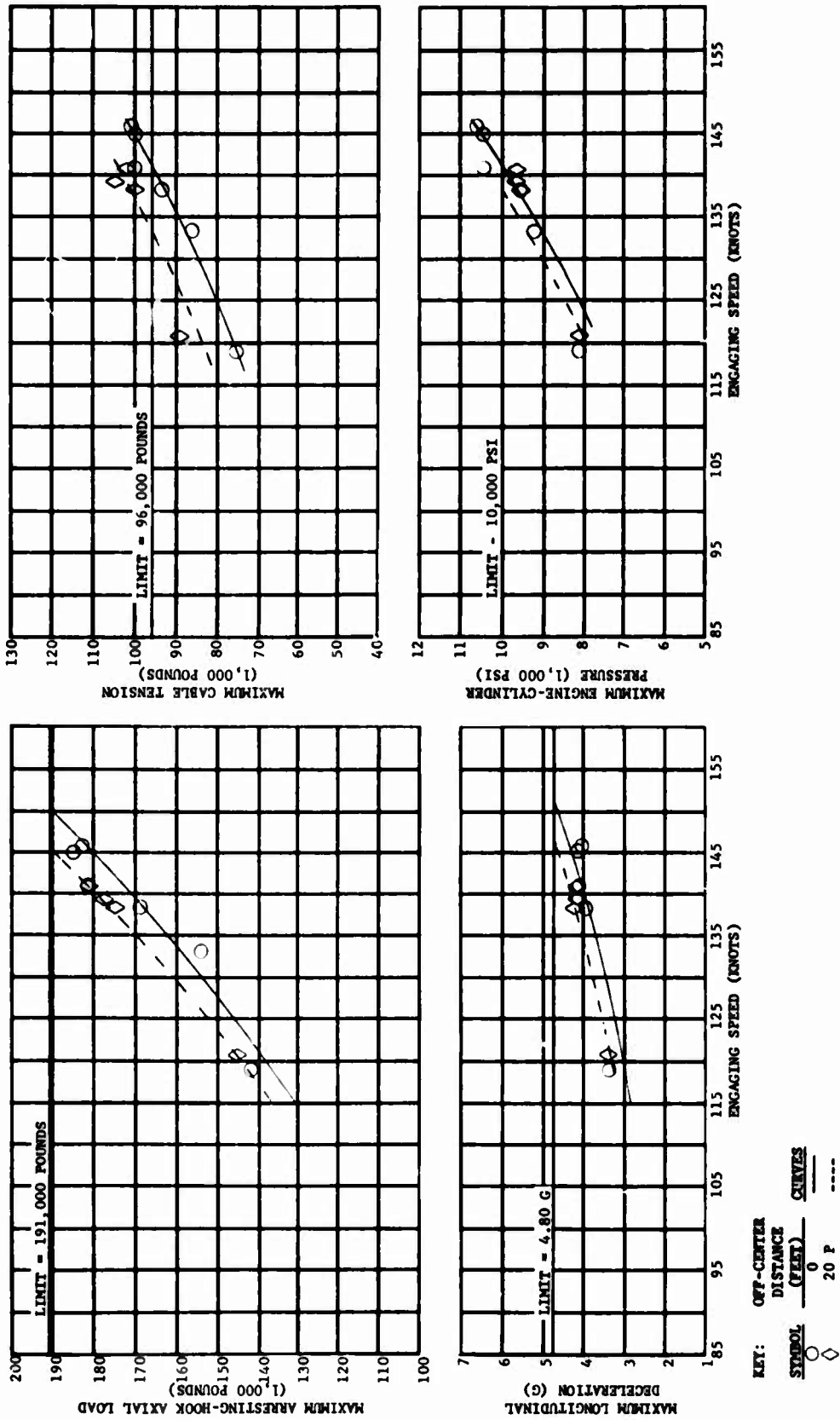


Figure 5 - Composite Graph of 40,000- to 42,000-Pound A-3A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using a Single Weight Setting)

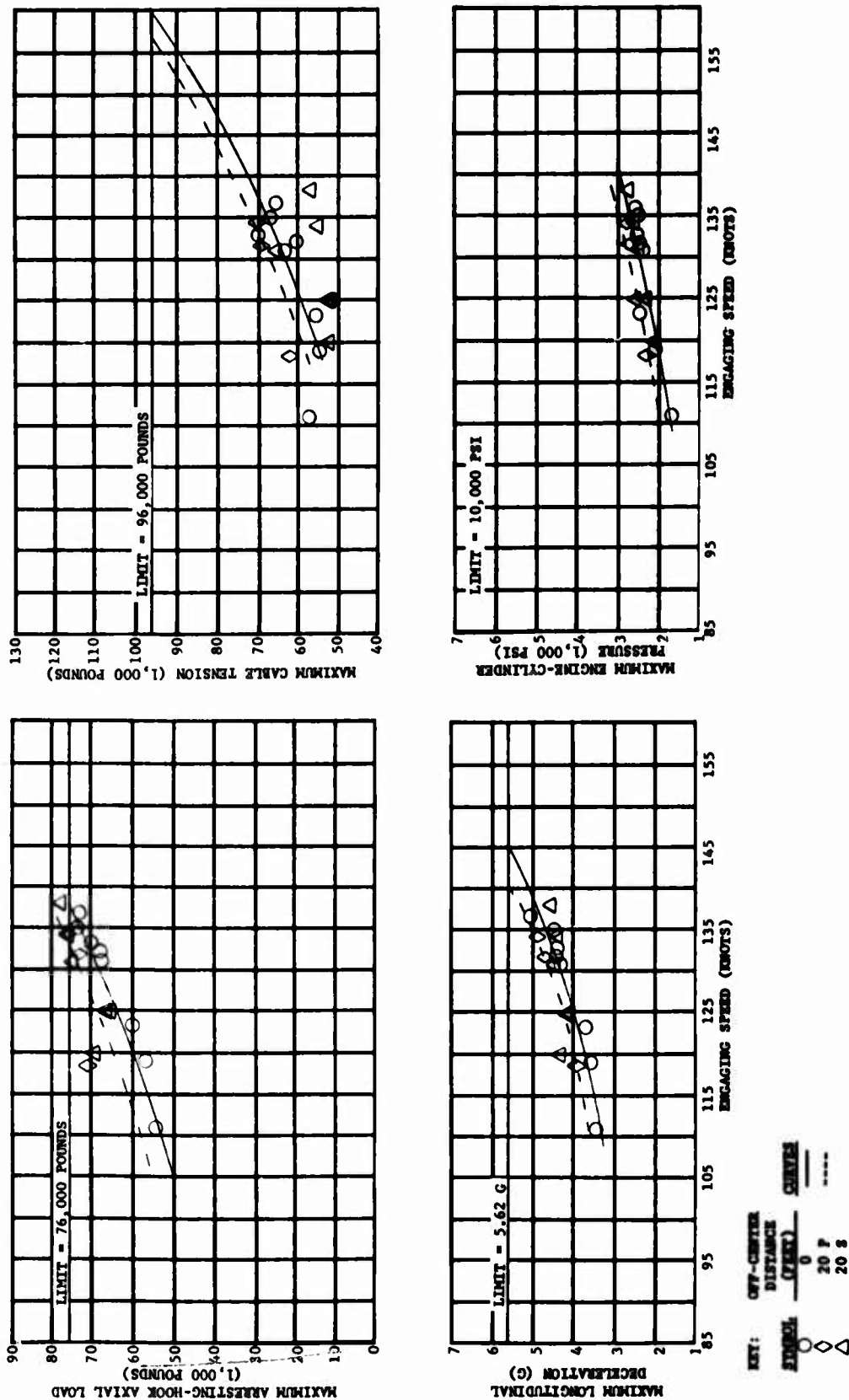


Figure 6 - Composite Graph of 13,500- to 14,500-Pound A-4B Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Chart 7 Mod 3 Arresting Gear Configured With Shave Dampers, Using an Actual Weight Setting)

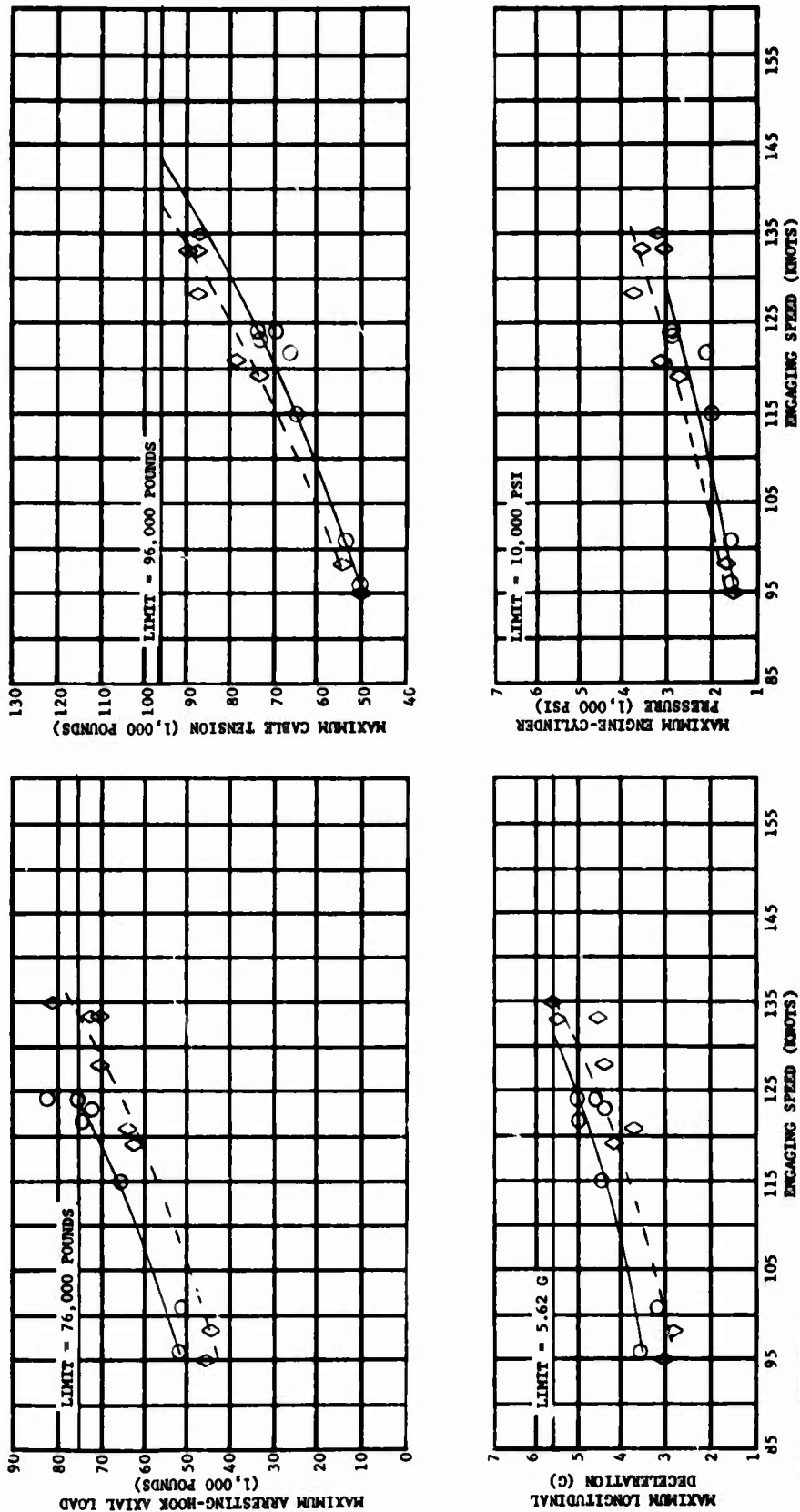


Figure 7 - Composite Graph of 13,500- to 14,500-Pound A-4B Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers, Using an Actual Weight Setting)

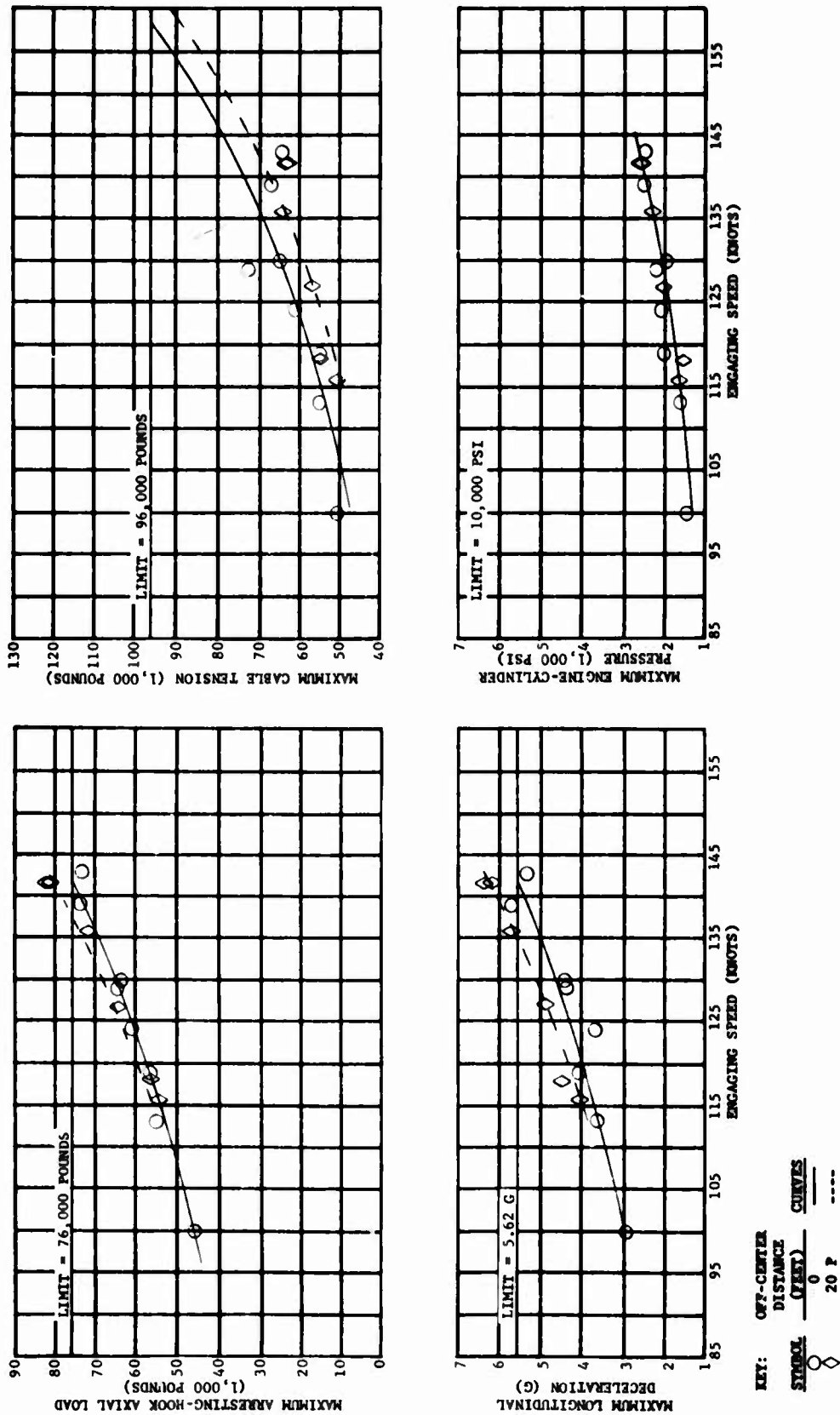
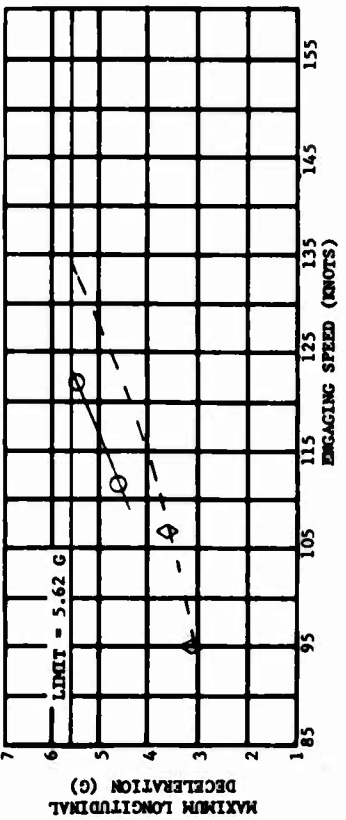
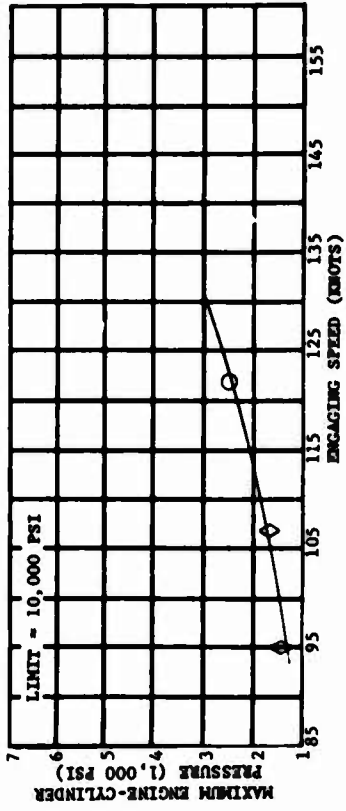
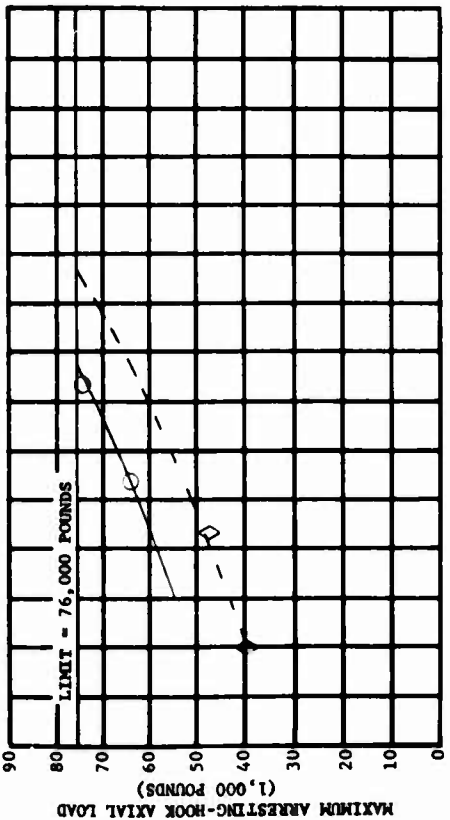
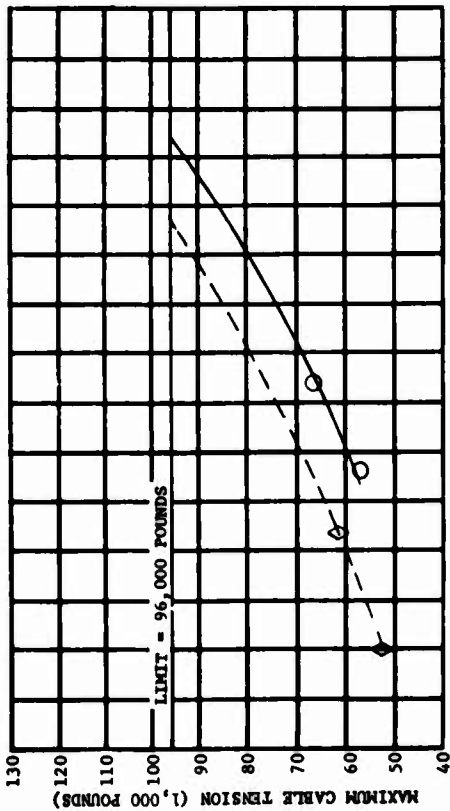


Figure 8 - Composite Graph of 11,500- to 12,500-Pound A-4B Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Shave Dampers, Using an Actual Weight Setting)



KEY: OFF-CENTER
DISTANCE
SYMBOL (FEET) CURVES
0
20 P ----

Figure 9 - Composite Graph of 11,500- to 12,500-Pound A-4B Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers, Using an Actual Weight Setting)

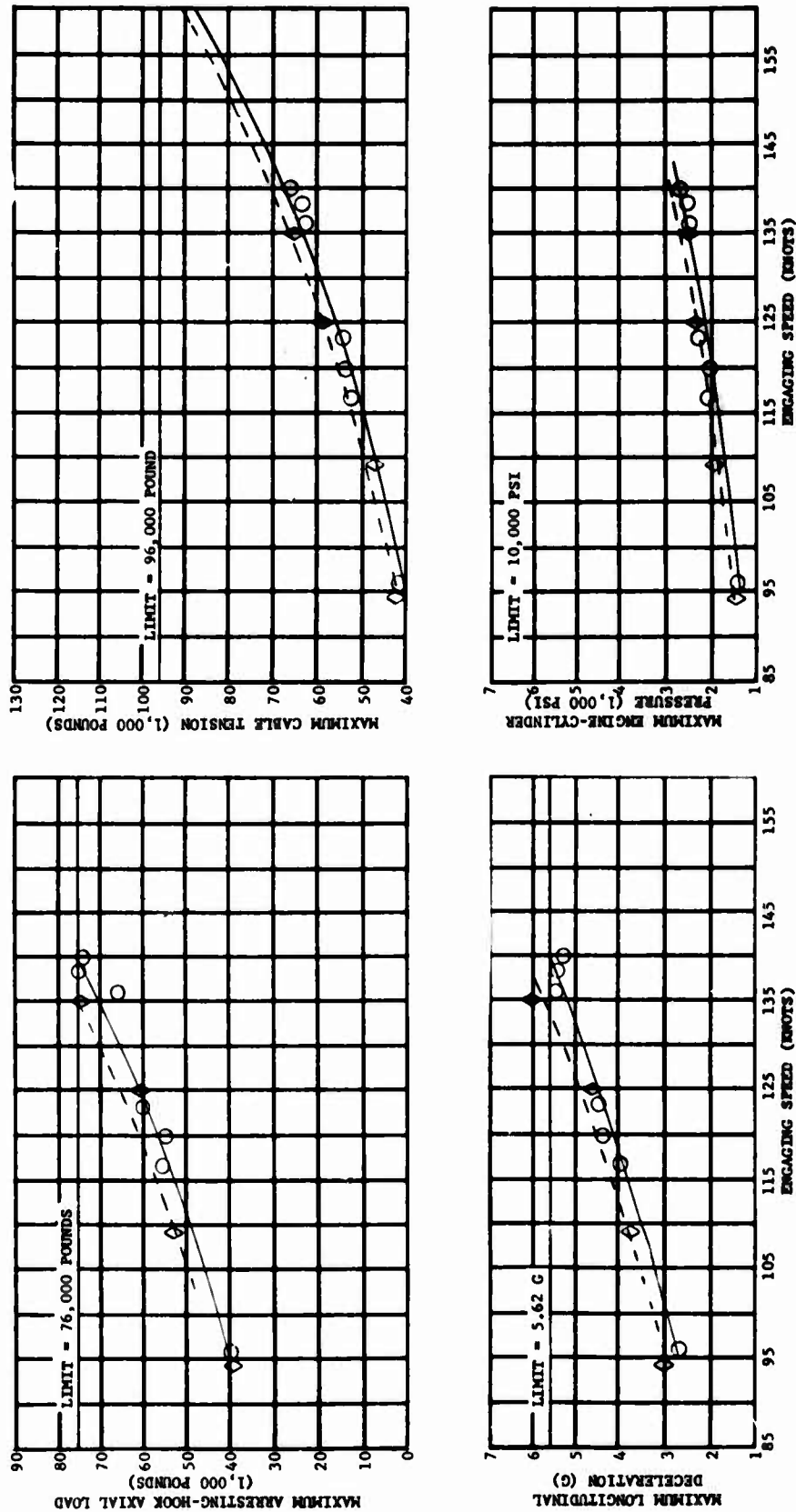


Figure 10 - Composite Graph of 11,500- to 12,500-Pound A-4B Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using a Single Weight Setting)

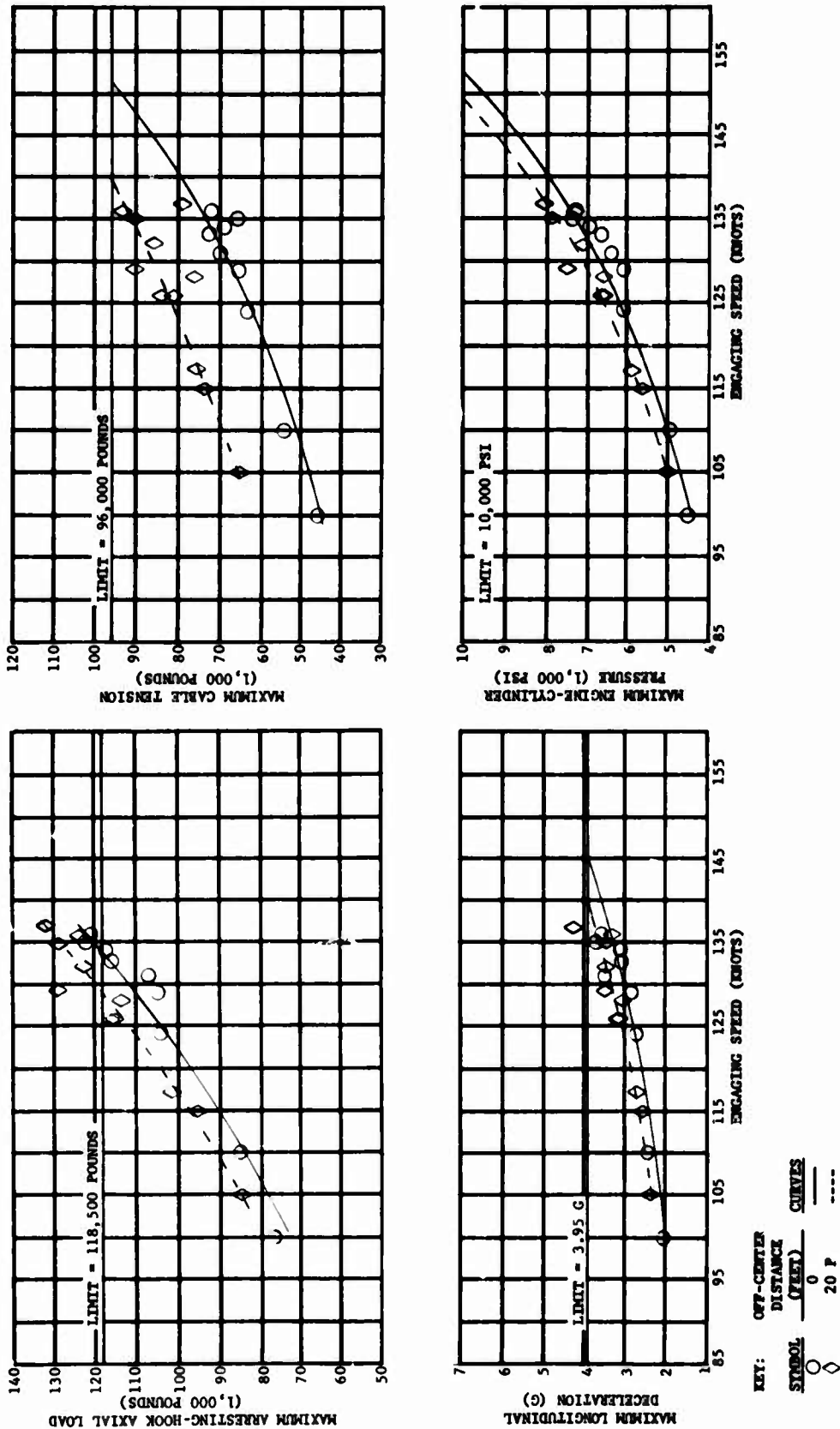


Figure 11 - Composite Graph of 31,000- to 33,000-Pound F-4A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using an Actual Weight Setting)

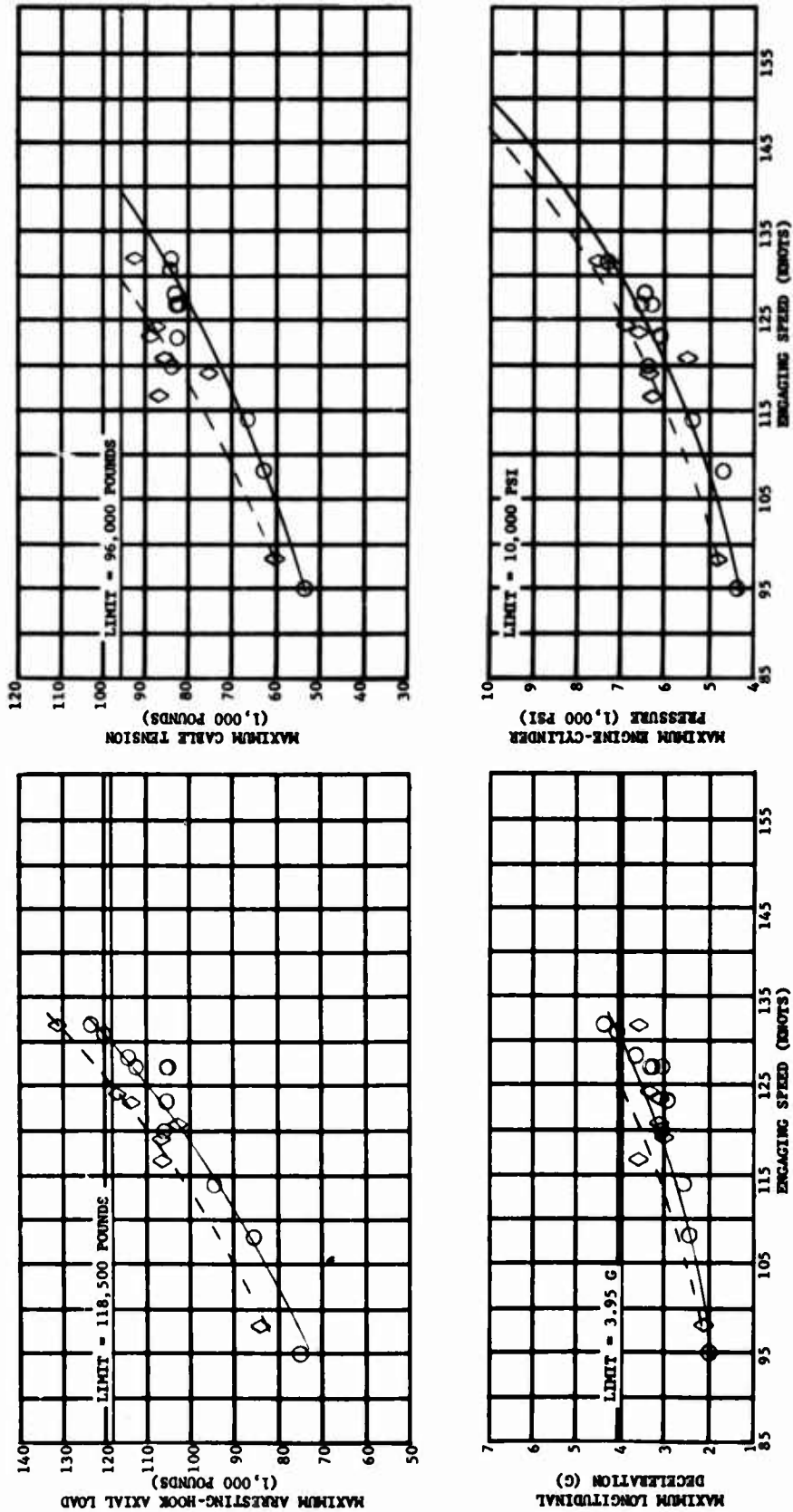
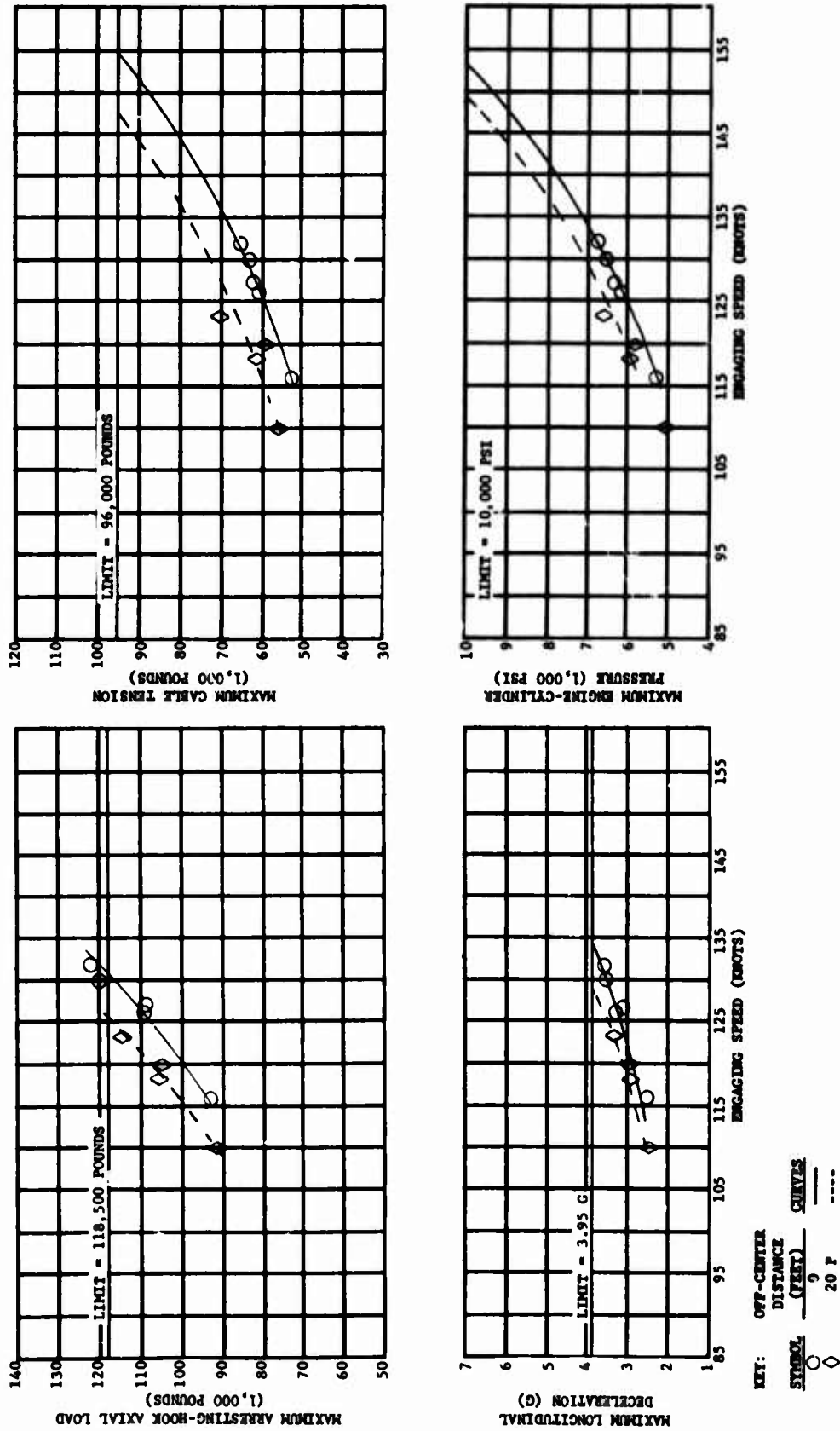
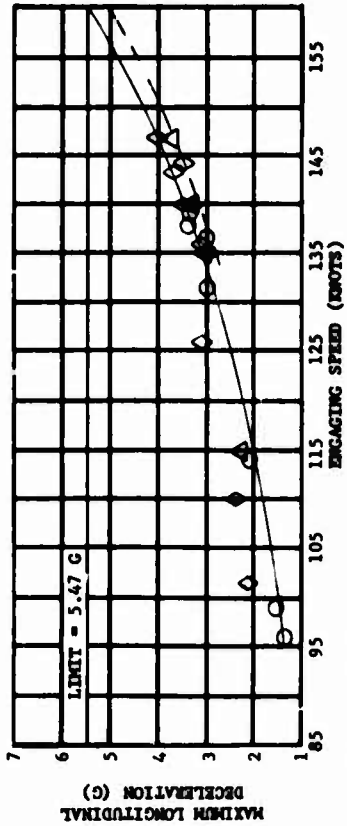
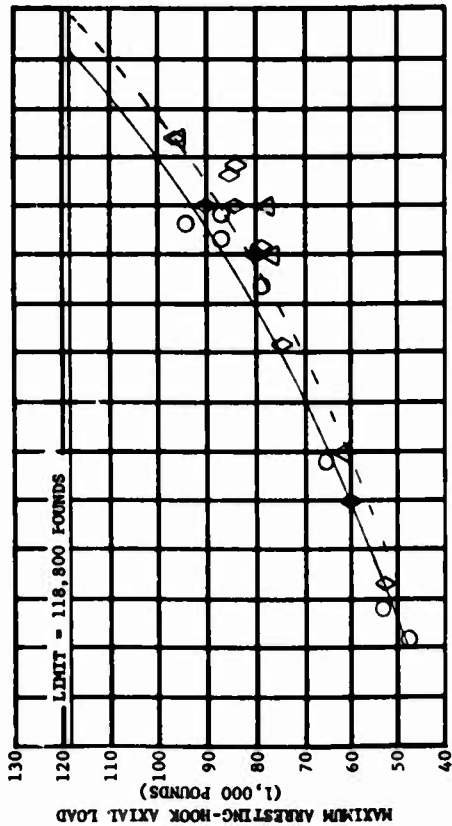
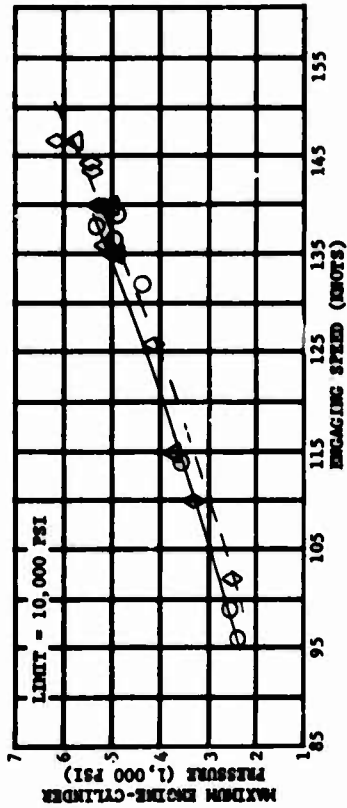
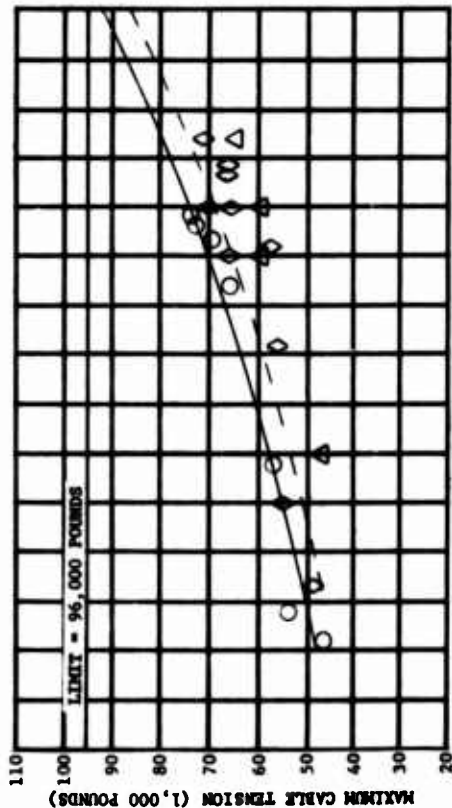


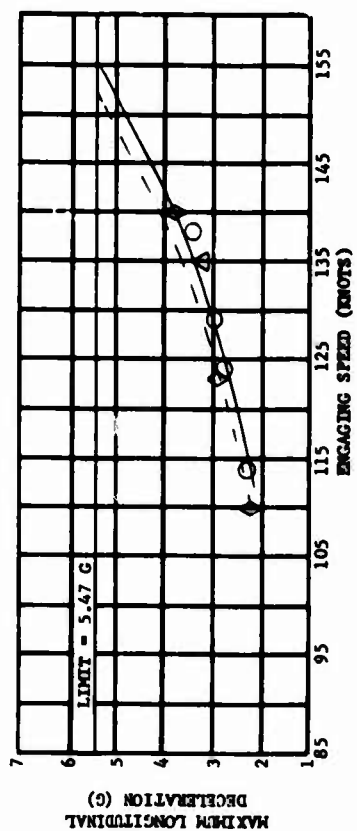
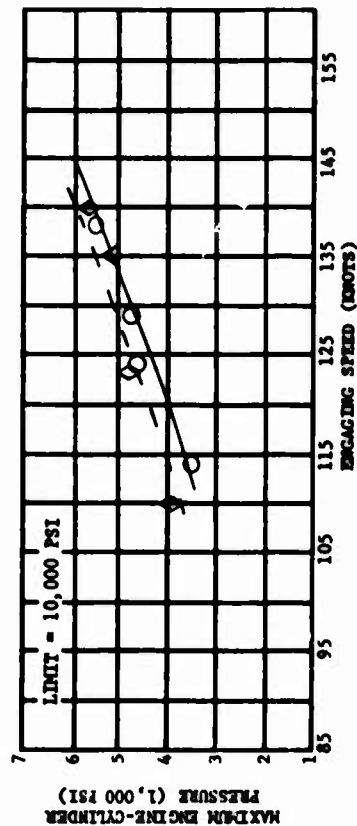
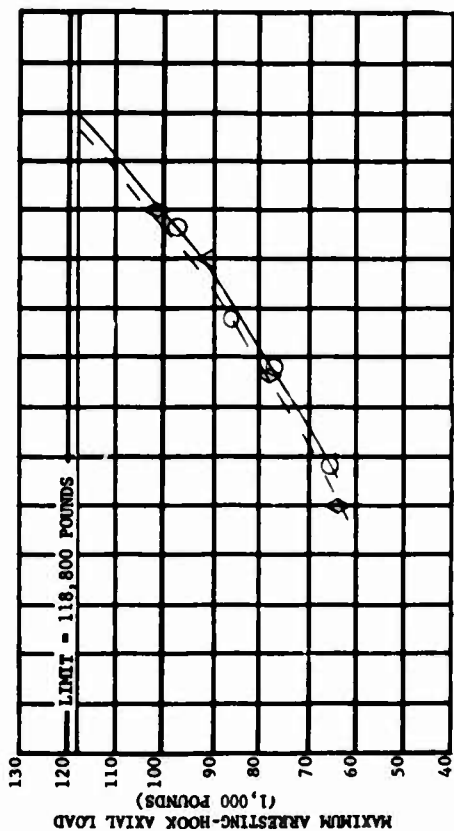
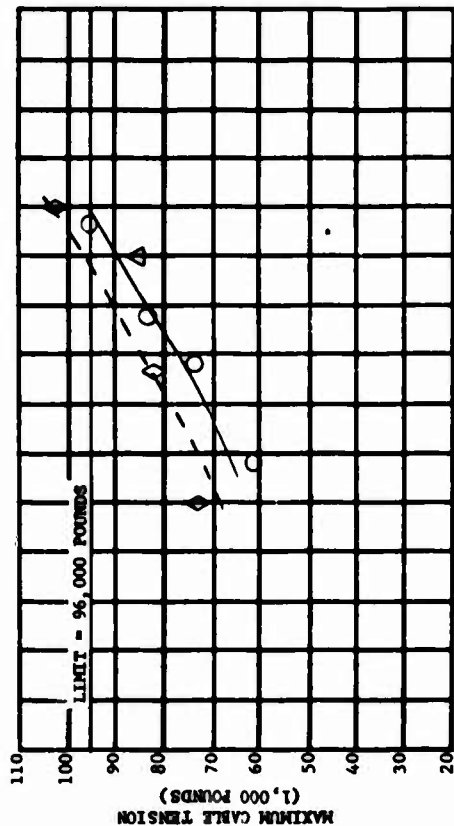
Figure 12 - Composite Graph of 31,000- to 33,000-Pound F-4A Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured Without Shave Dampers, Using an Actual Weight Setting)





KEY: OFF-CENTER
DISTANCE
(FEET) CURVES
0 P ---
20 P ---
20 S ---

Figure 14 - Composite Graph of 20,000- to 22,000-Pound F-8D Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Shave Dampers, Using an Actual Weight Setting)



KEY: OFF-CENTER
DISTANCE
SYMBOL (FEET) CURVES
0
20 P
20 S

Figure 15 - Composite Graph of 20,000- to 22,000-Pound F-8D Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers, Using an Actual Weight Setting)

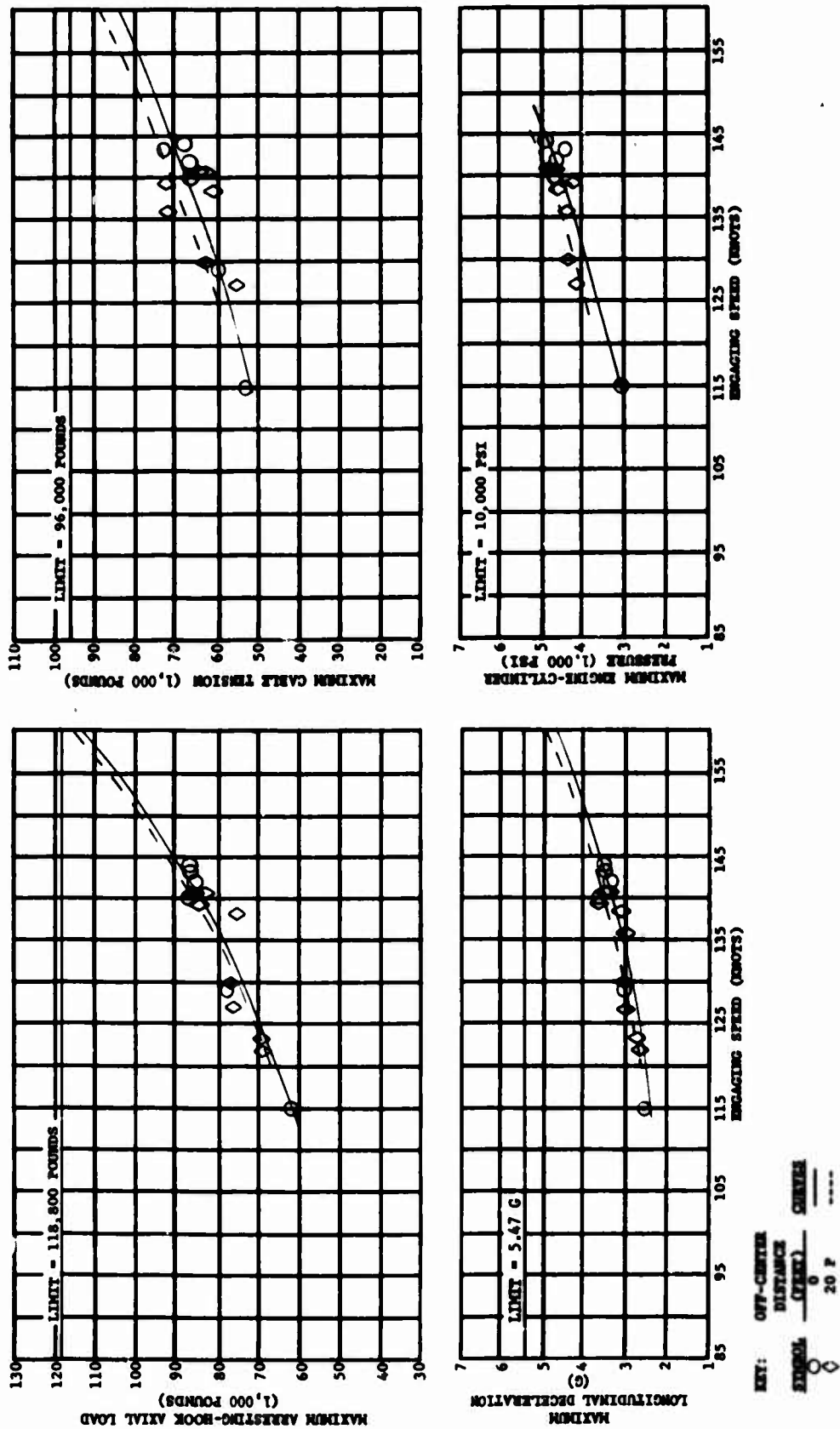


Figure 16 - Composite Graph of 20,000- to 22,000-Pound F-8D Aircraft Tests, Showing Maximum Parameters versus Engaging Speed (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using a Single Weight Setting)



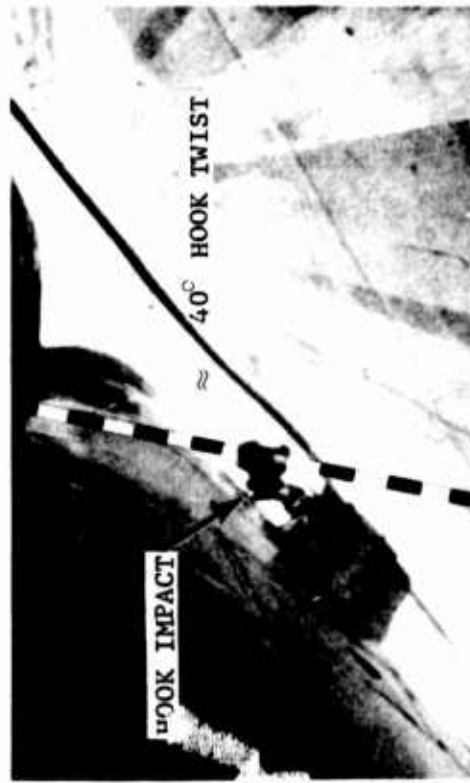
A. TIME = 0.078 SECOND



B. TIME = 0.083 SECOND



C. TIME = 0.088 SECOND



D. TIME = 0.109 SECOND

Figure 17 - Views of F-8D Aircraft Arresting Hook Disengaging From the Crossdeck Pendant and Damaged Bumper Pad; Event 23109, 20-Foot OFF-CENTER (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers)

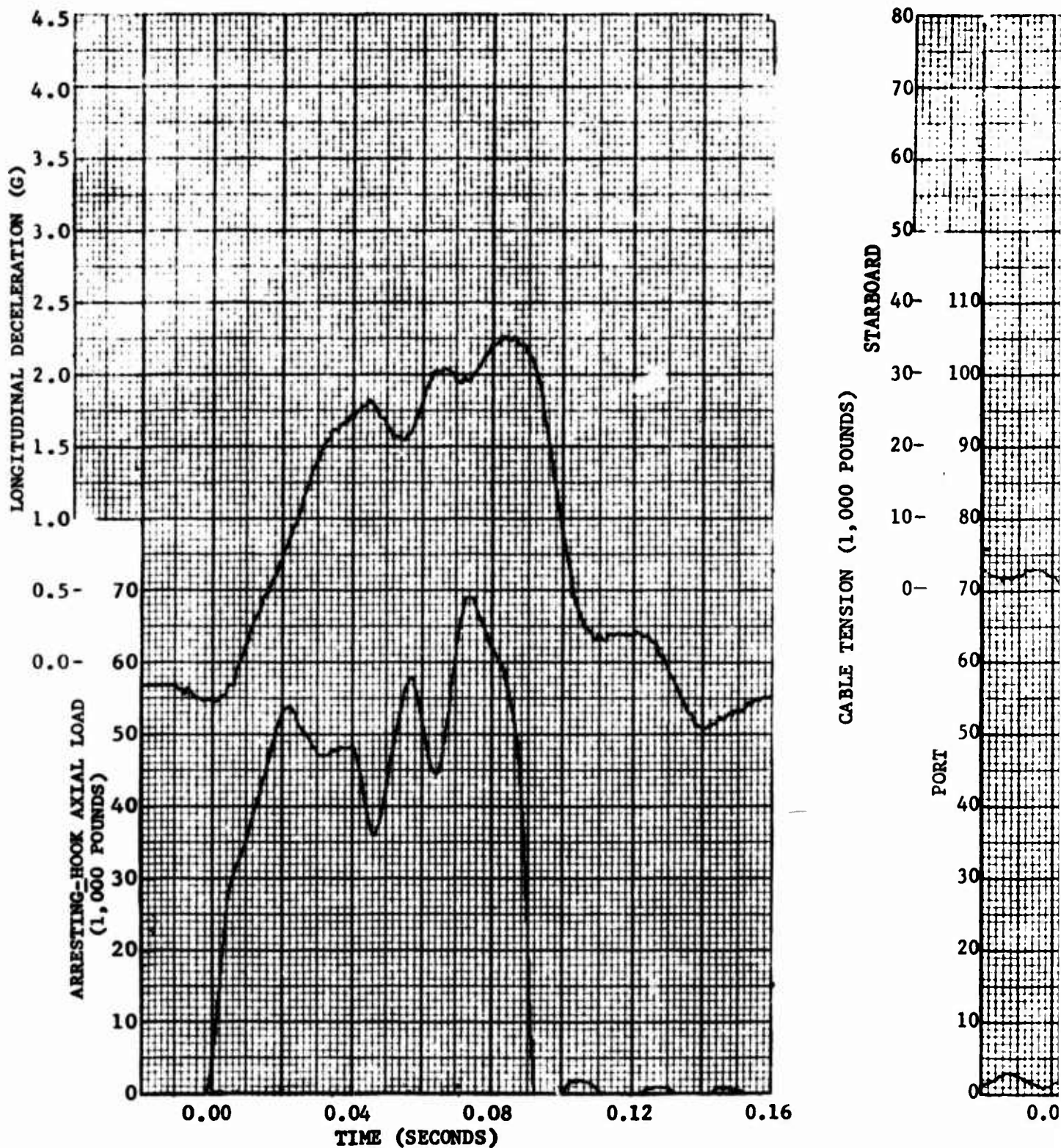
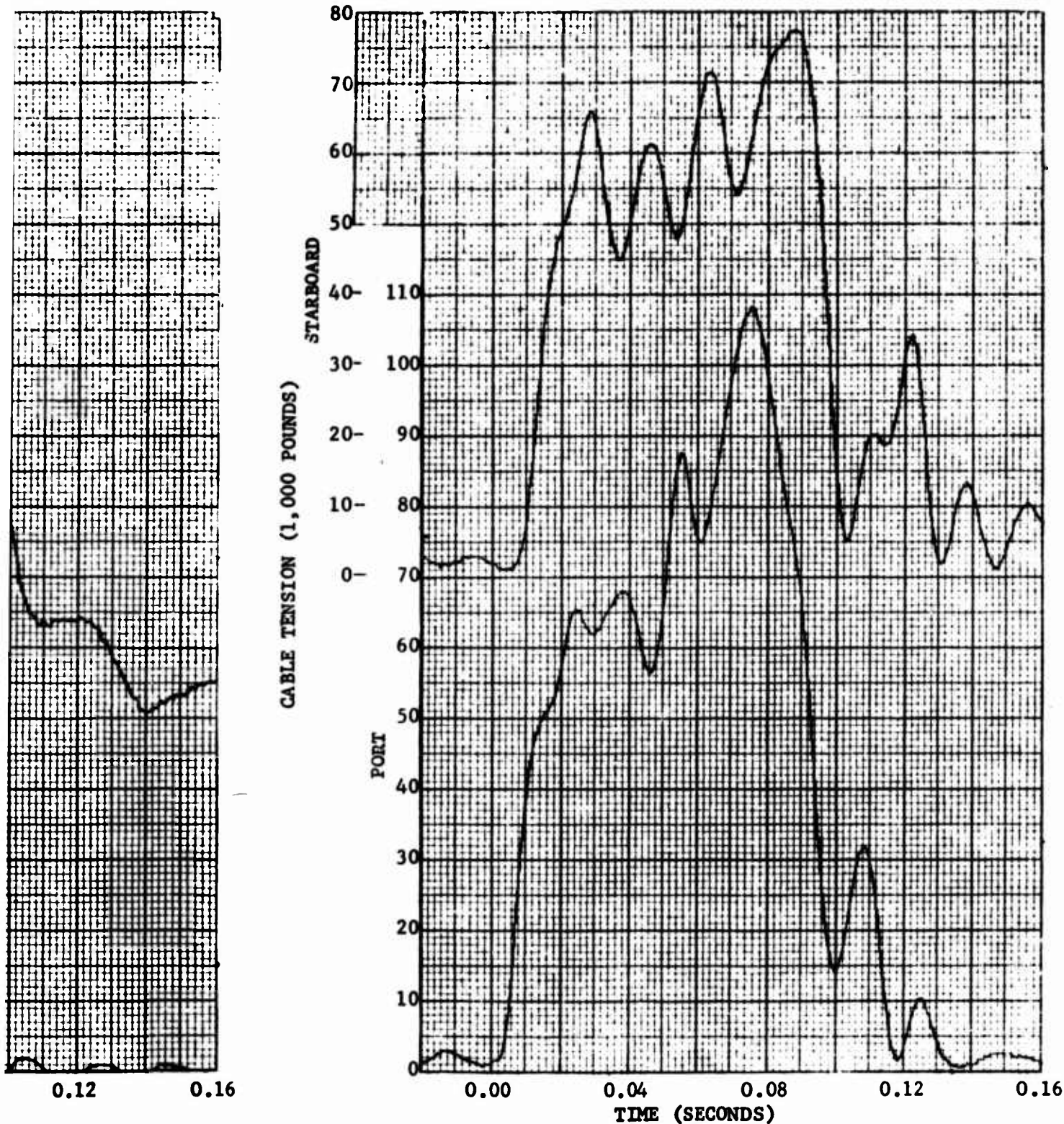


Figure 18 - Sample Time History Showing the Oscillation in A Longitudinal-Deceleration, and Cable-Tension the F-8 Aircraft Arresting Hook Twists and (Mark 7 Mod 3 Arresting Gear Configured With

A



Time History Showing the Oscillation in Arresting-Hook-Axial Load, Longitudinal-Deceleration, and Cable-Tension Data that Occurs When the F-8 Aircraft Arresting Hook Twists and Sheds the Pendant (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers)



B = 0.115 SECOND AFTER WIRE PICKUP

A = WIRE PICKUP

Figure 19 - Views of F-4A Aircraft Attitude with Stabilator/Crossdeck Pendant Contact, Event 24115, Arresting-Hook Touchdown 10 Feet Before Deck Pendant (Mark 7 Mod 3 Arresting Gear Configured with Sheave Dampers)

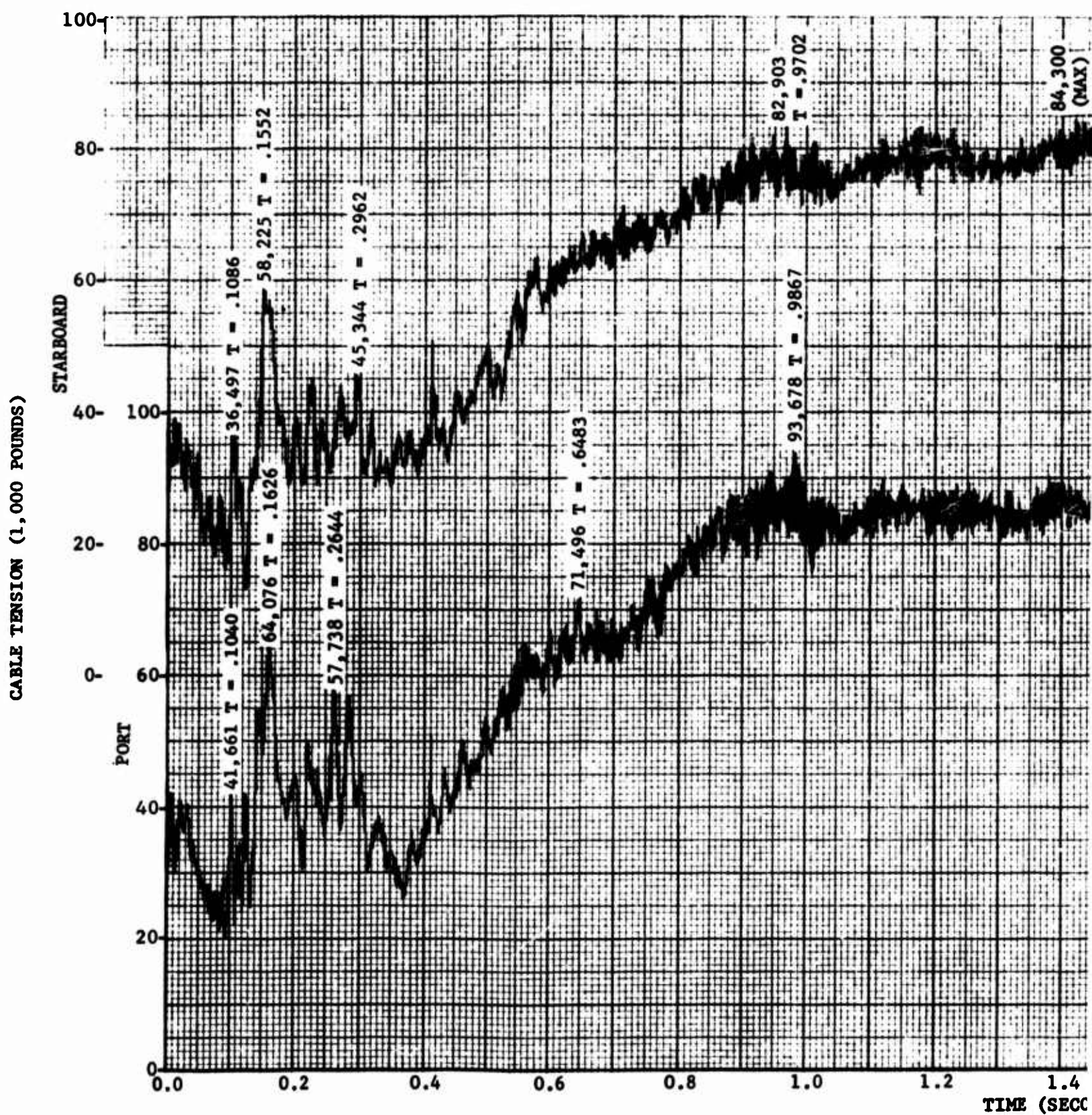
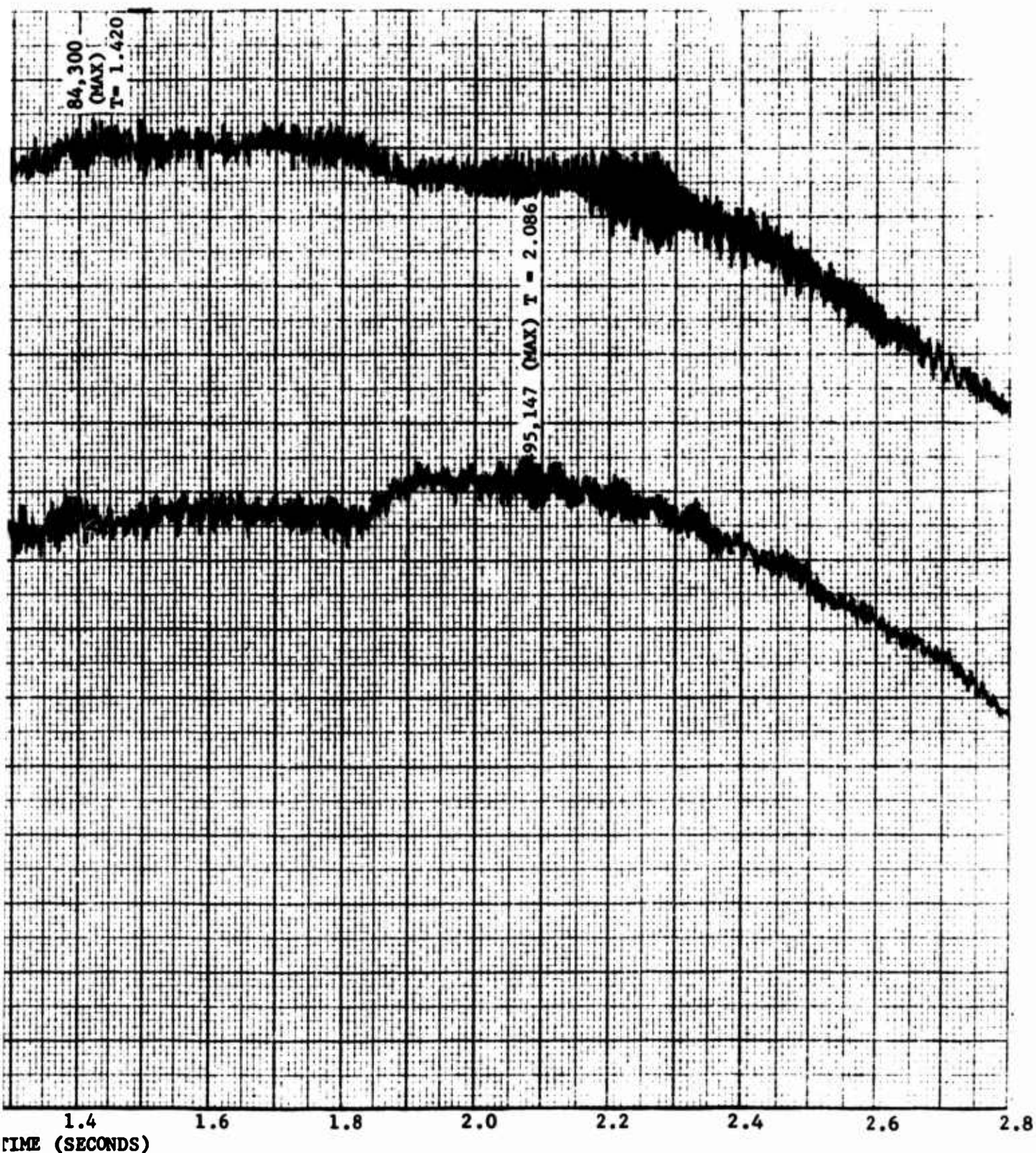


Figure 21 - Frequency Response Characteristics of Port and Starboard Cable Ten
ON-CENTER Arrestment of a 49,200-Pound A-3 Air
(Mark 7 Mod 3 Arresting Gear Configured With Shee



Cable Tensions Recorded at a Frequency of 330 Hz During Event 21650,
and A-3 Aircraft at an Engaging Speed of 124 Knots
(With Sheave Dampers, Using an Actual Weight Setting)

B



B = 0.115 SECOND AFTER WIRE PICKUP



A = WIRE PICKUP

Figure 20 - Views of F-4A Aircraft Attitude without Stabilator/Crossdeck Pendant Contact,
Event 24133, Arresting-Hook Touchdown 60 Feet Before Deck Pendant
(Mark 7 Mod 3 Arresting Gear Configured with Sheave Dampers)

CABLE TENSION (1,000 POUNDS)

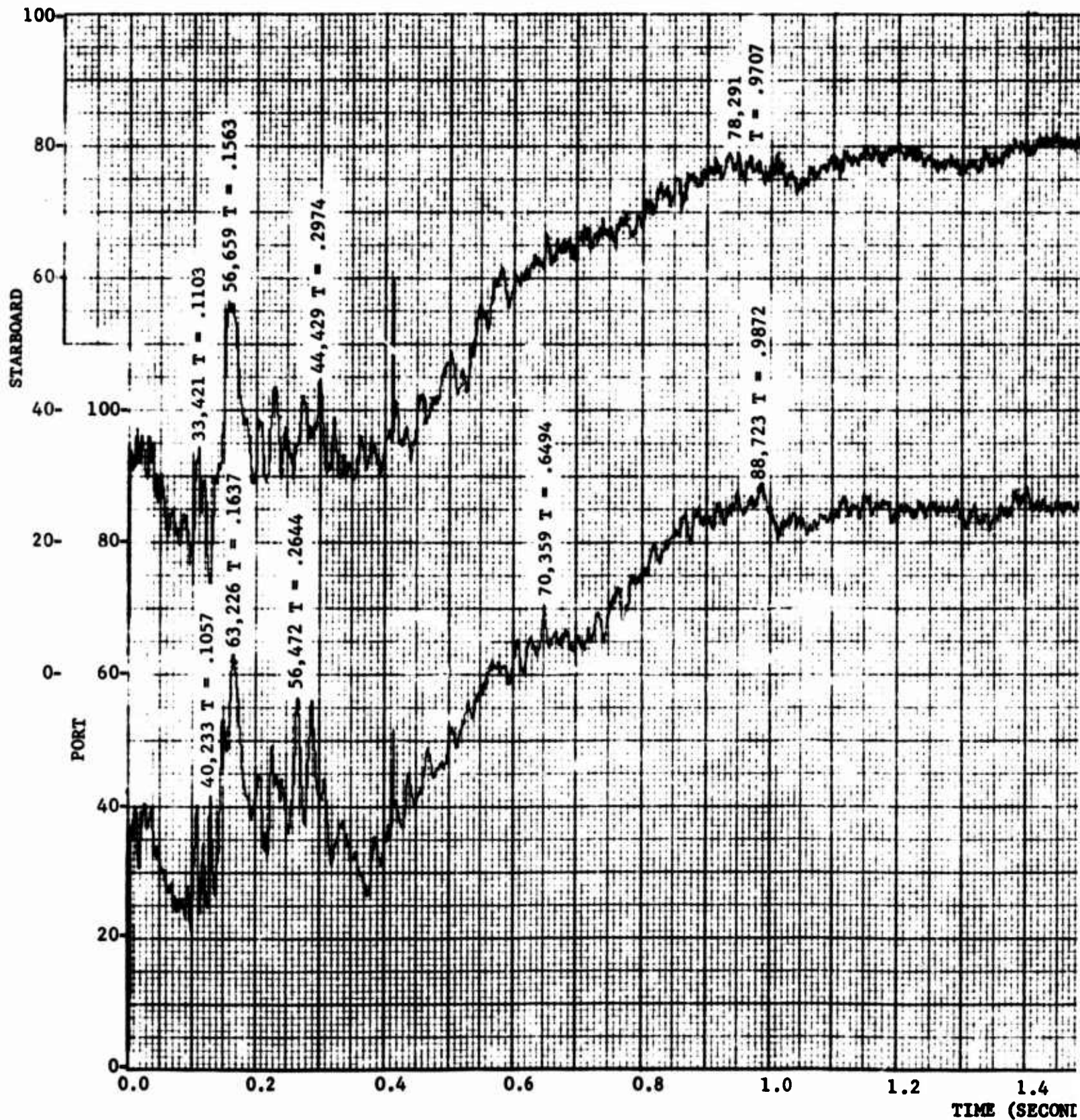
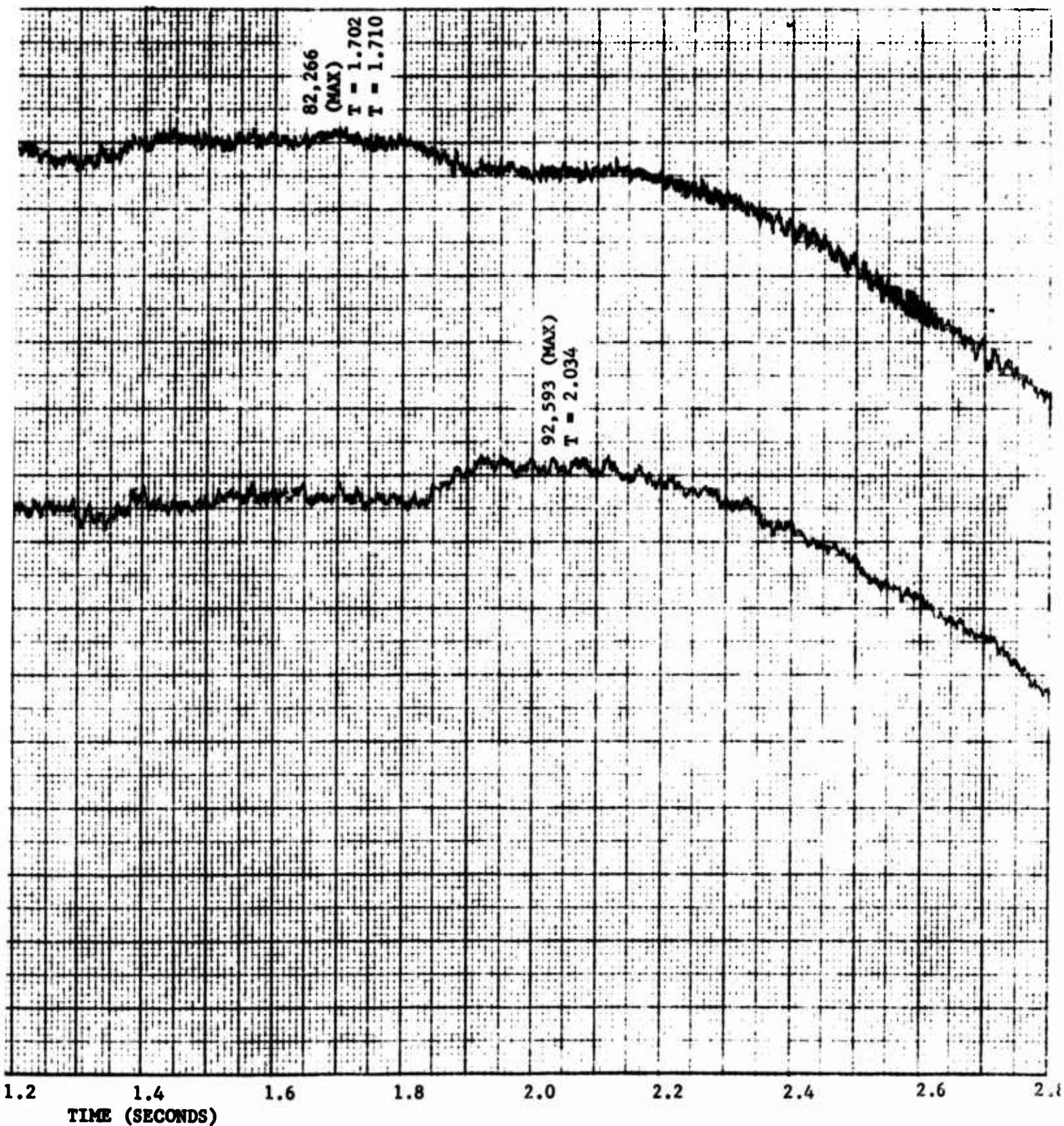


Figure 22 - Frequency Response Characteristics of Port and Starboard Cable Tension-CENTER Arrestment of a 49,200-Pound A-3 Aircraft (Mark 7 Mod 3 Arresting Gear Configured With Sheave)

A



Onboard Cable Tensions Filtered to a Frequency of 160 Hz During Event 22650
 100-Pound A-3 Aircraft at an Engaging Speed of 124 Knots
 Measured With Sheave Dampers, Using an Actual Weight Setting)

B

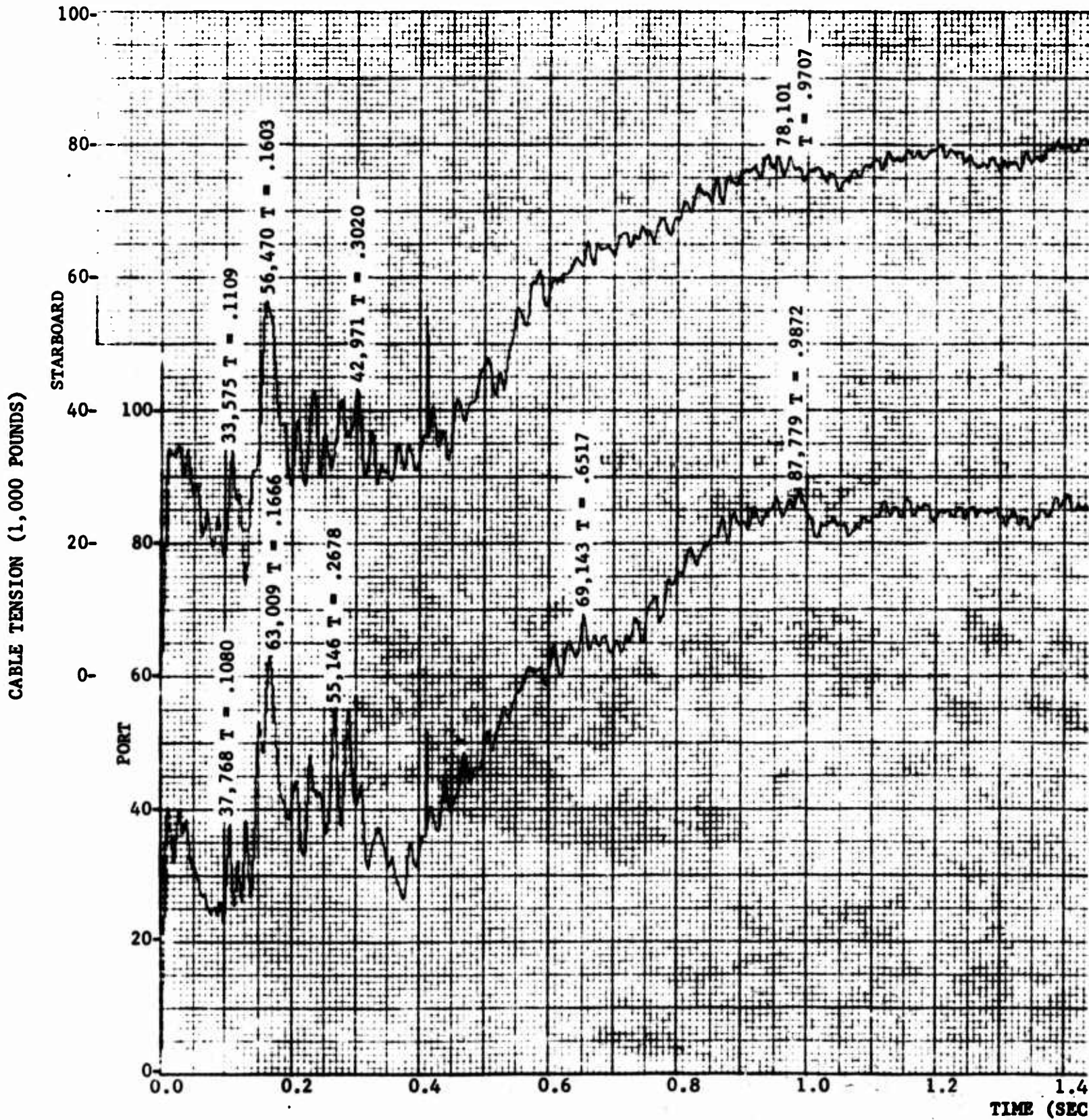
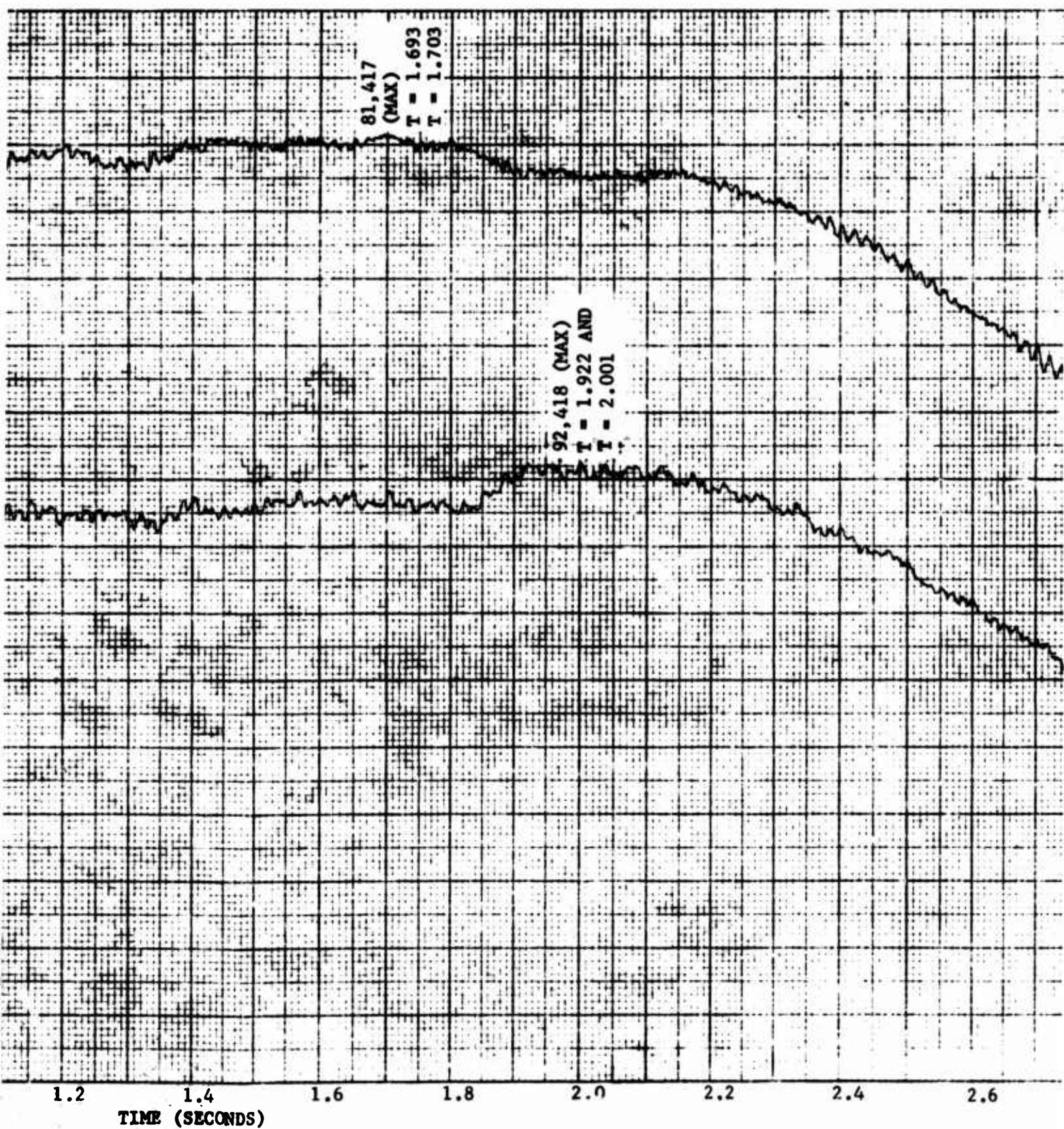


Figure 23 - Frequency Response Characteristics of Port and Starboard Cable Tension
ON-CENTER Arrestment of a 49,200-Pound A-3 Al
(Mark 7 Mod 3 Arresting Gear Configured With Shear)

A



Starboard Cable Tensions Filtered to a Frequency of 60 Hz During Event 21650,
49,200-Pound A-3 Aircraft at an Engaging Speed of 124 Knots
Configured With Sheave Dampers, Using an Actual Weight Setting)

B

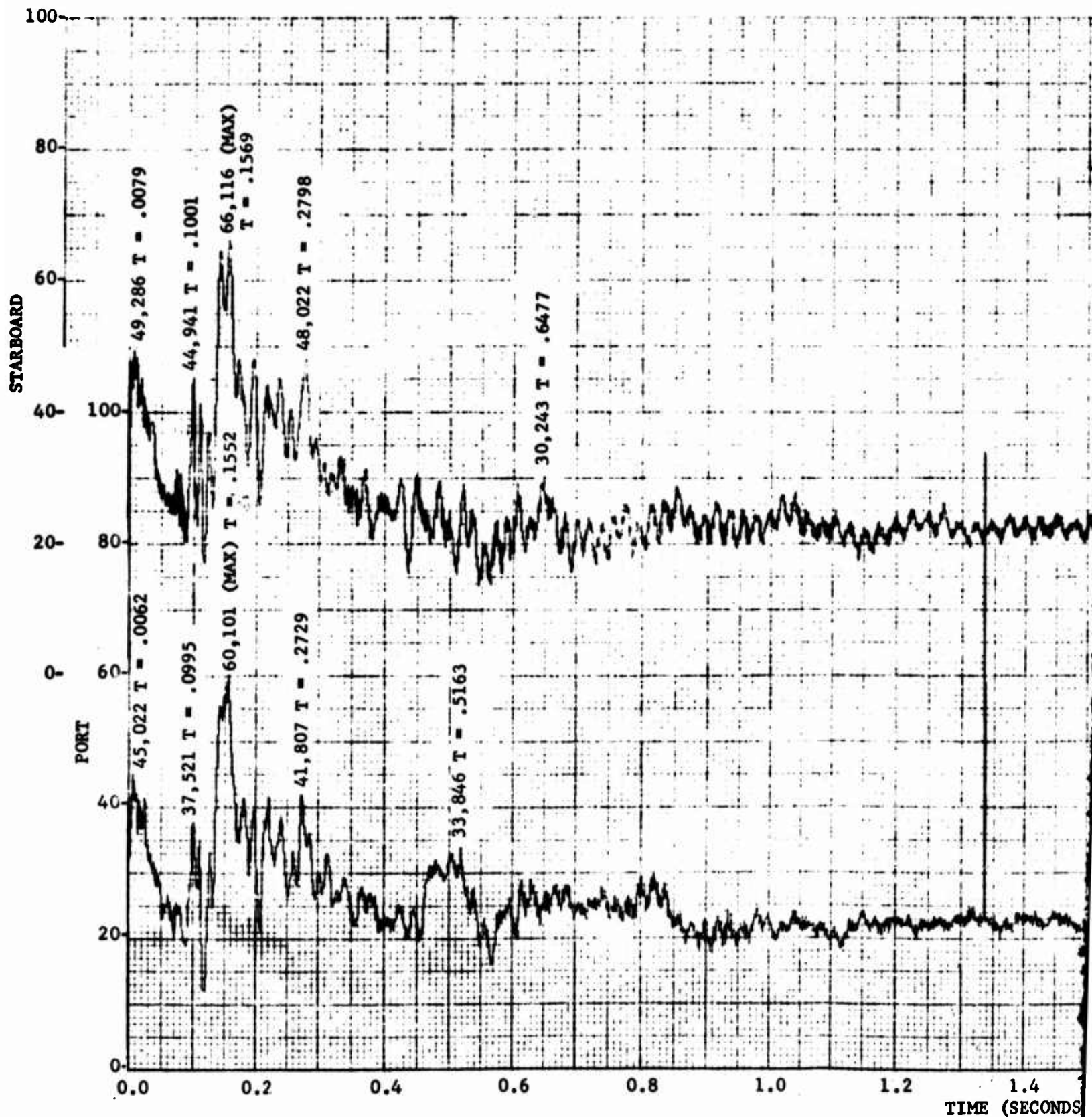
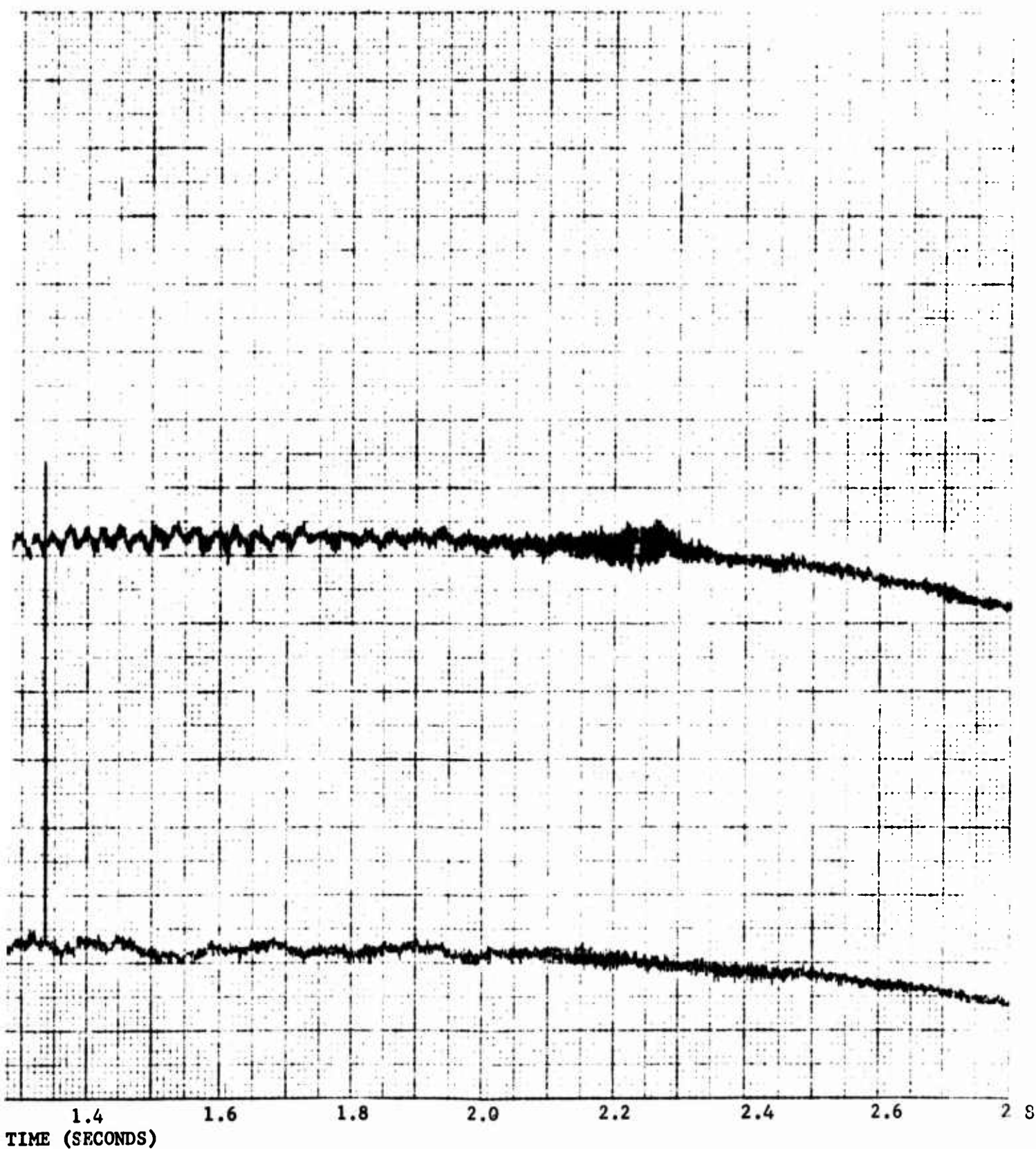


Figure 24 - Frequency Response Characteristics of Port and Starboard Cable Tension
ON-CENTER Arrestment of a 13,500-Pound A-4 Aircraft
(Mark 7 Mod 3 Arresting Gear Configured With Sheave)

A



Cable Tensions Recorded at a Frequency of 330 Hz During Event 21961,
and A-4 Aircraft at an Engaging Speed of 137 Knots
(With Sheave Dampers, Using an Actual Weight Setting)

B

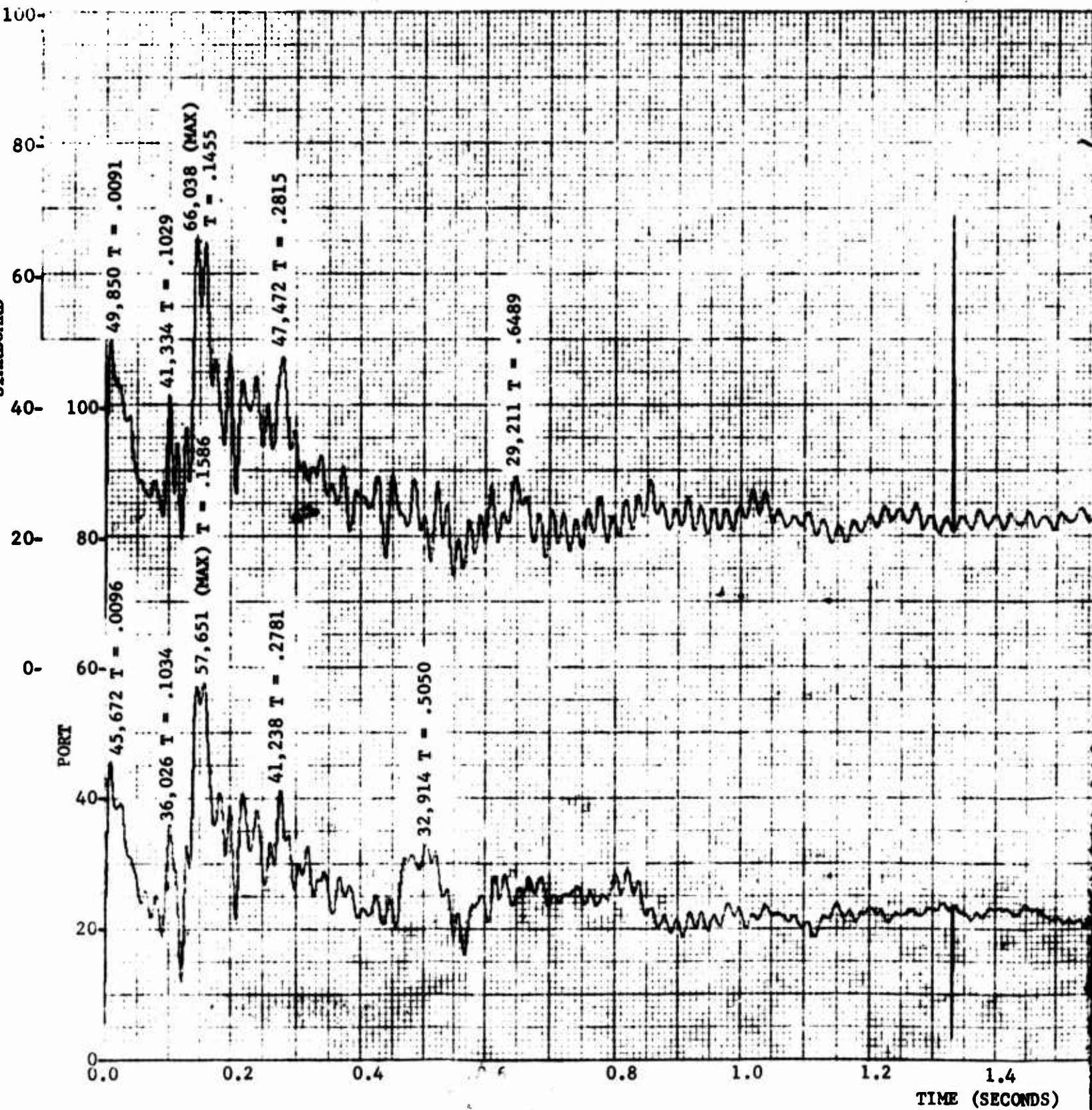
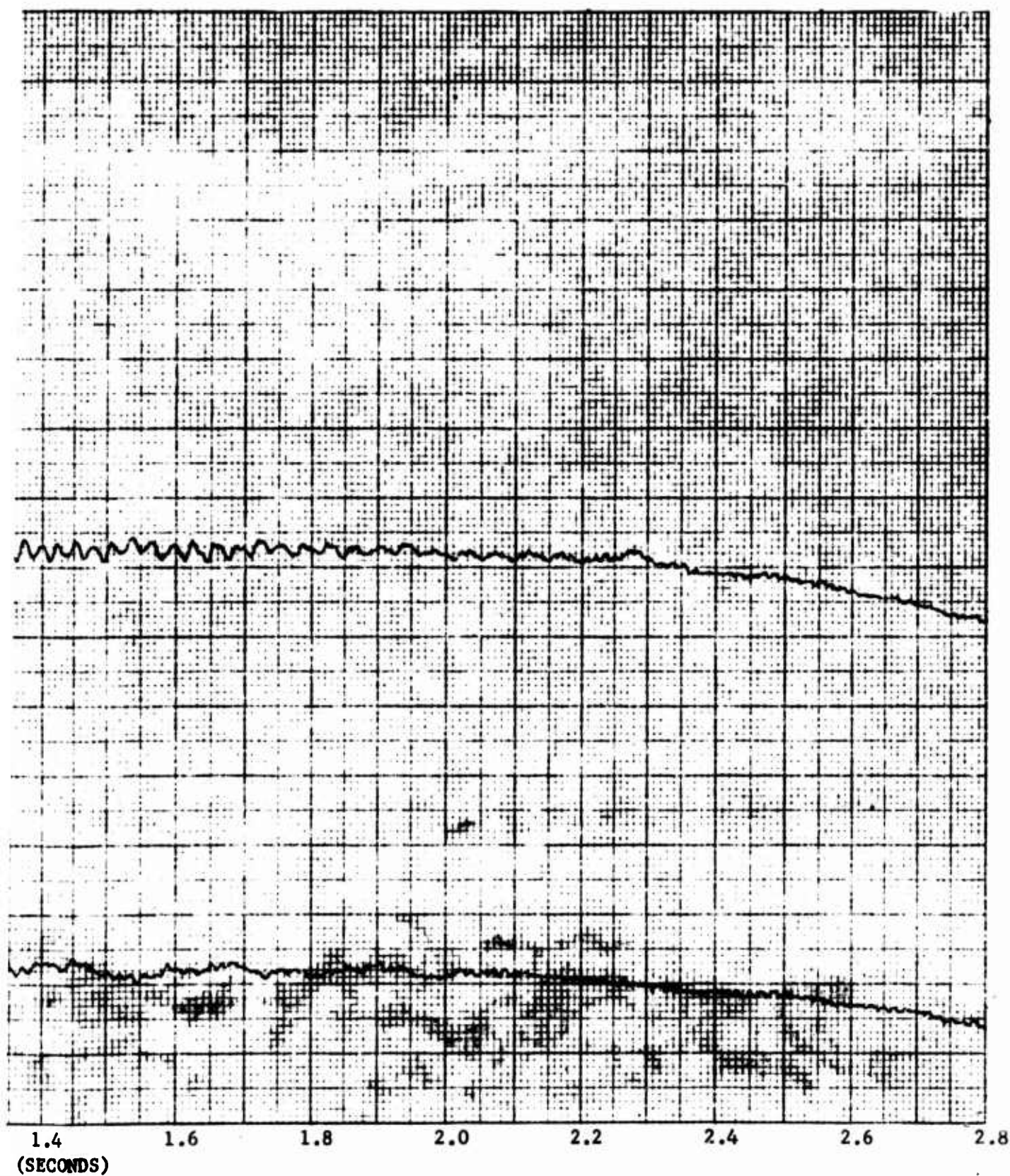


Figure 25 - Frequency Response Characteristics of Port and Starboard Cable Tensions
ON-CENTER Arrestment of a 13,500-Pound A-4 Aircraft
(Mark 7 Mod 3 Arresting Gear Configured With Sheave Dan

A



Sheave Tensions Filtered to a Frequency of 60 Hz During Event 21961,
A-4 Aircraft at an Engaging Speed of 137 Knots
(with Sheave Dampers, Using an Actual Weight Setting)

B

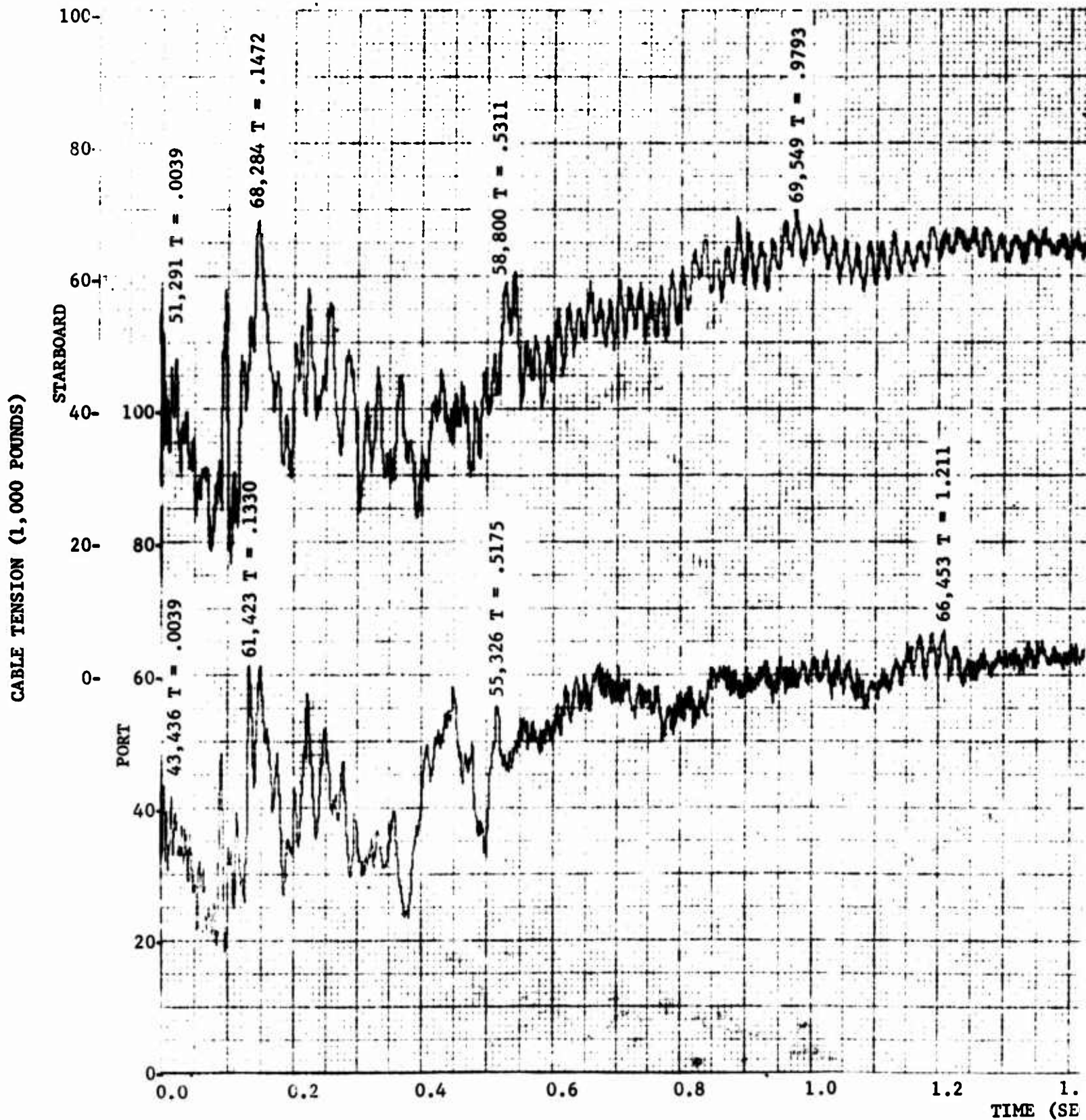
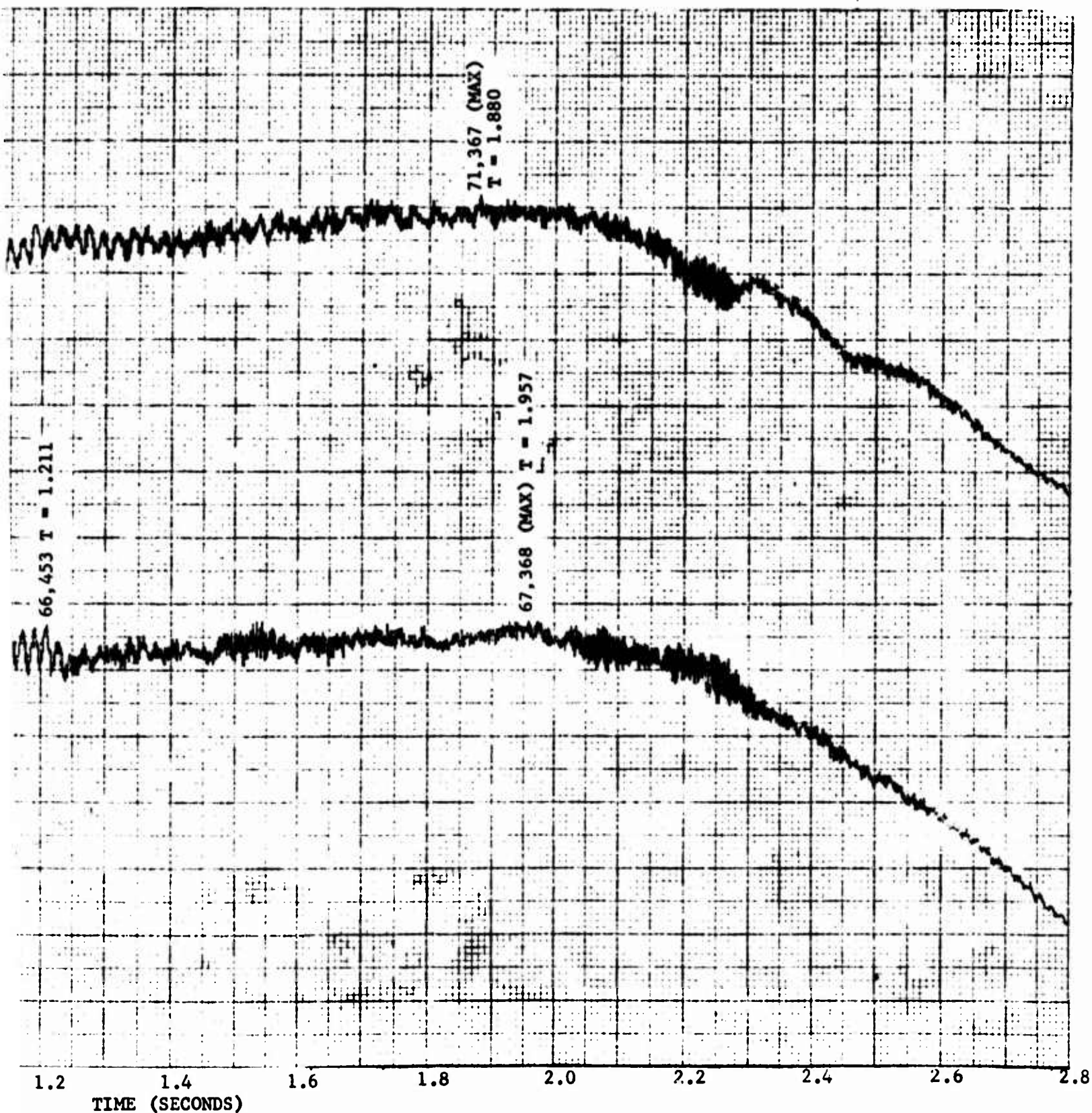


Figure 26 - Frequency Response Characteristics of Port and Starboard Cable
ON-CENTER Arrestment of a 32,300-Pound F-4
(Mark 7 Mod 3 Arresting Gear Configured With S

A



tarboard Cable Tensions Recorded at a Frequency of 330 Hz During Event 21874,
,300-Pound F-4 Aircraft at an Engaging Speed of 136 Knots
nfigured With Sheave Dampers, Using an Actual Weight Setting)

B

CABLE TENSION (1,000 POUNDS)

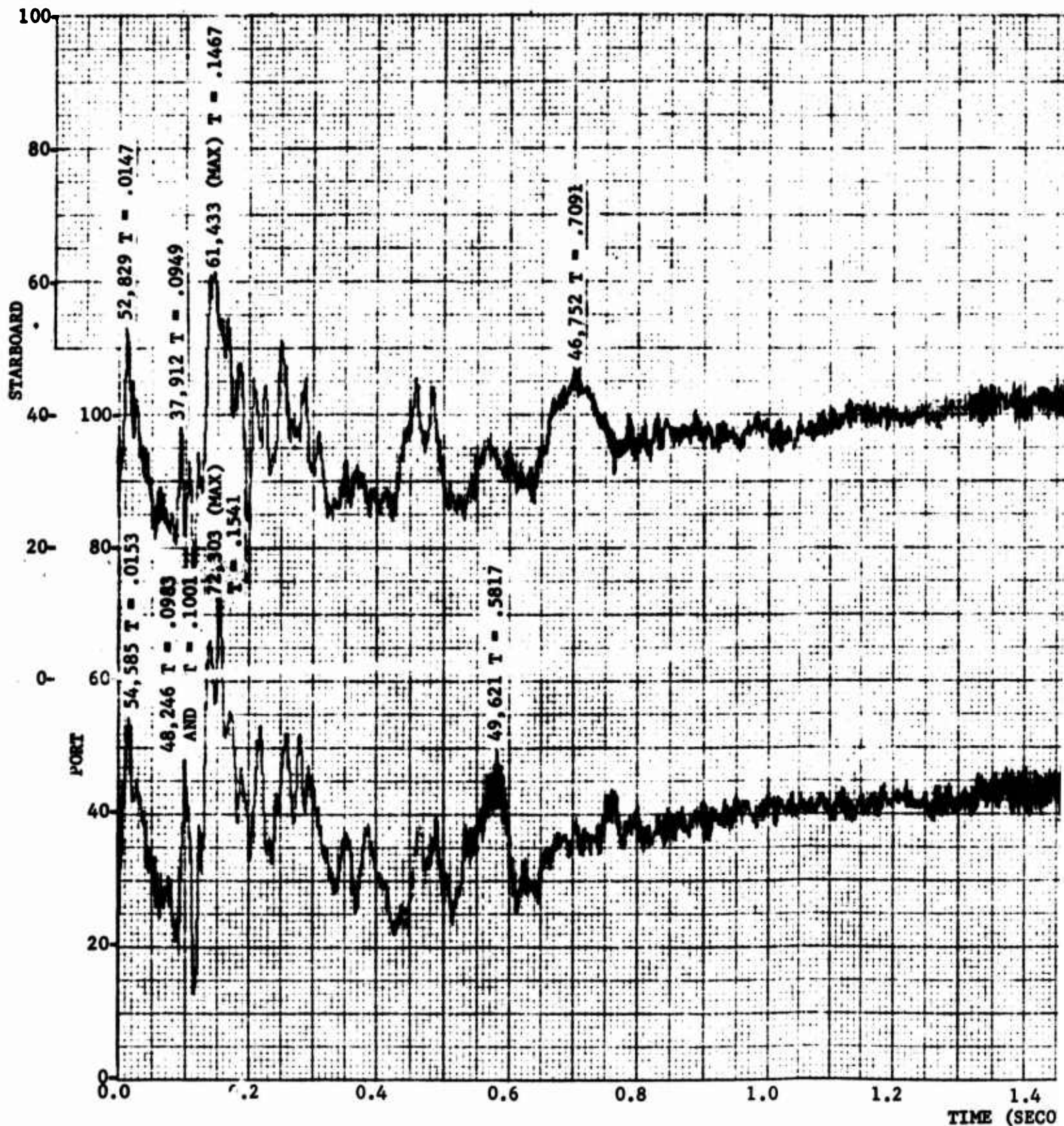


Figure 28 - Frequency Response Characteristics of Port and Starboard Cable Tens
ON-CENTER Arrestment of a 21,400-Pound F-8 Airc
(Mark 7 Mod 3 Arresting Gear Configured With Sheav

A

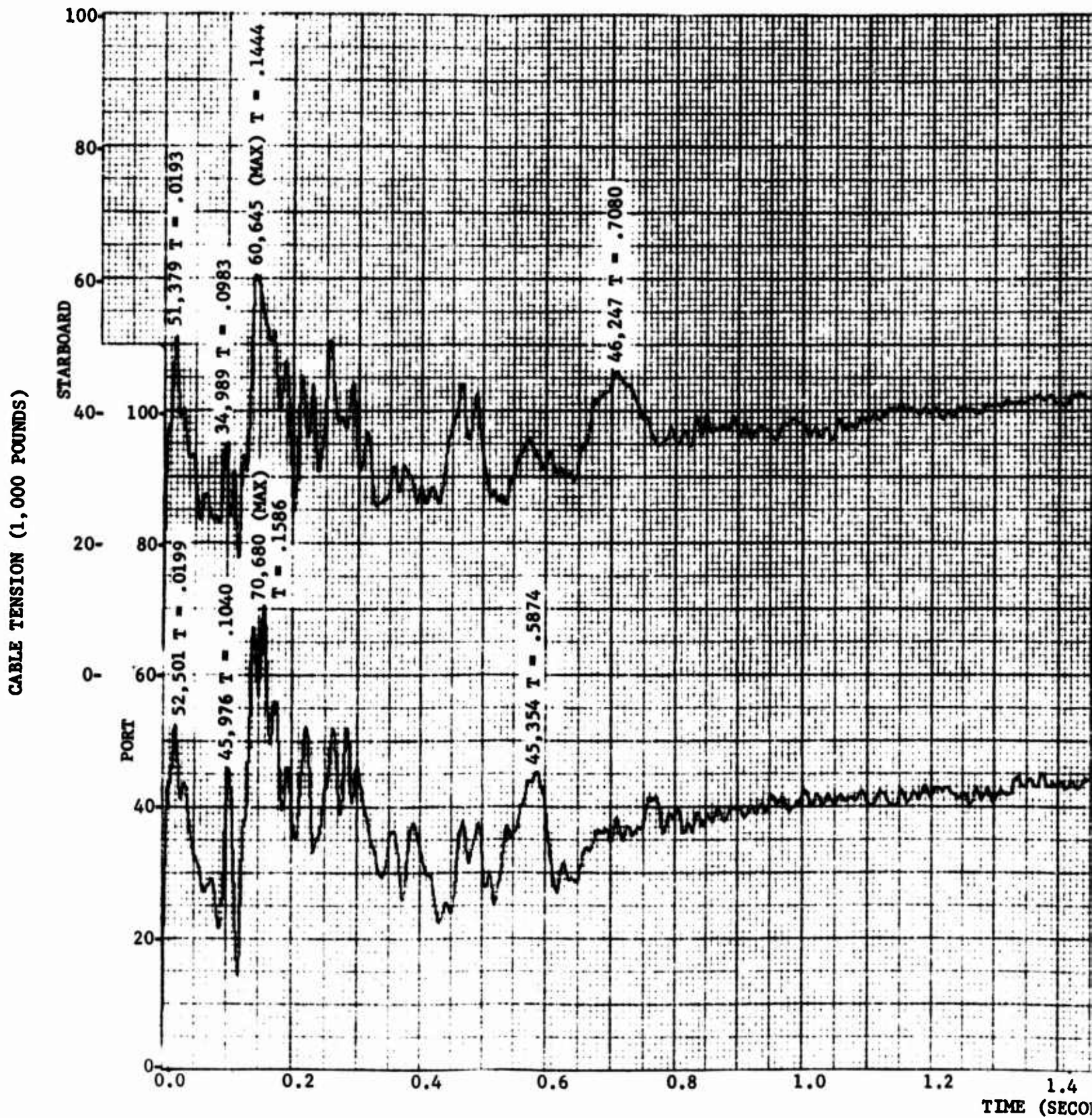
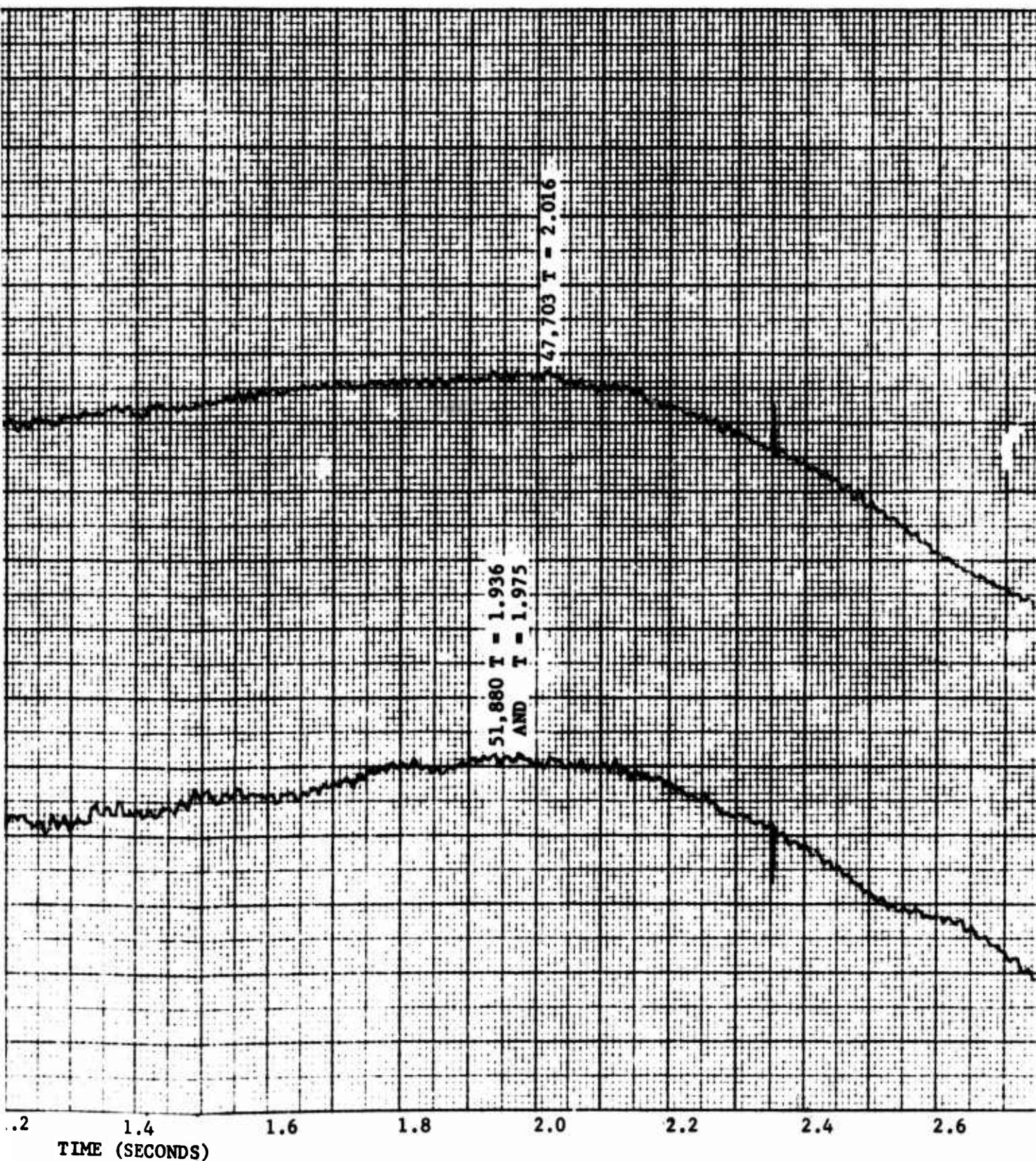


Figure 29 - Frequency Response Characteristics of Port and Starboard Cable Tension
ON-CENTER Arrestment of a 21,400-Pound F-8 Aircraft
(Mark 7 Mod 3 Arresting Gear Configured With Shear Pins)

A

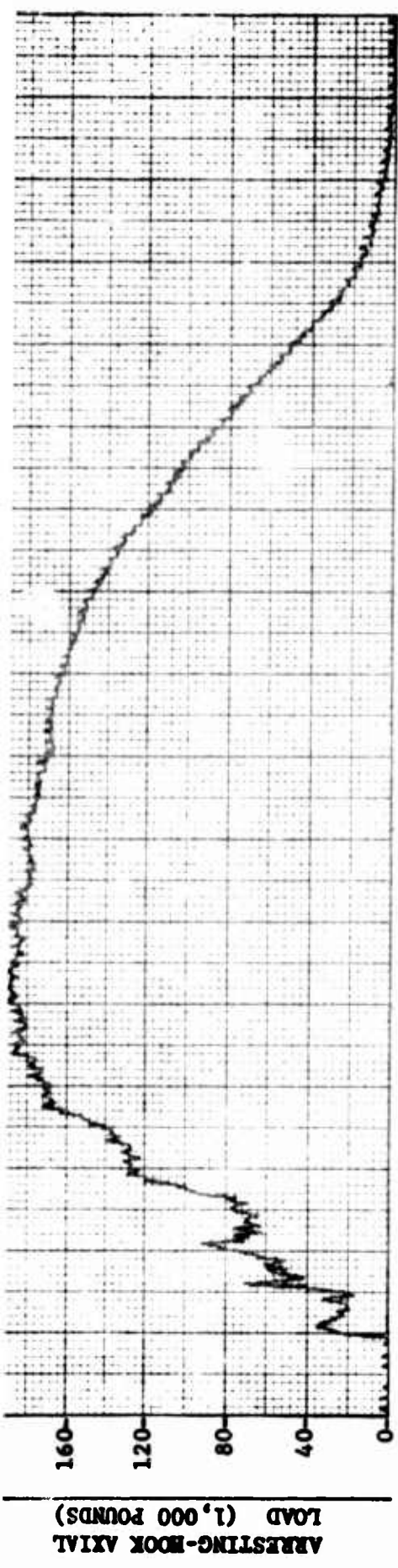


board Cable Tensions Filtered to a Frequency of 60 Hz During Event 21668,
0-Pound, F-8 Aircraft at an Engaging Speed of 138 Knots
gured With Sheave Dampers, Using an Actual Weight Setting)

B



A



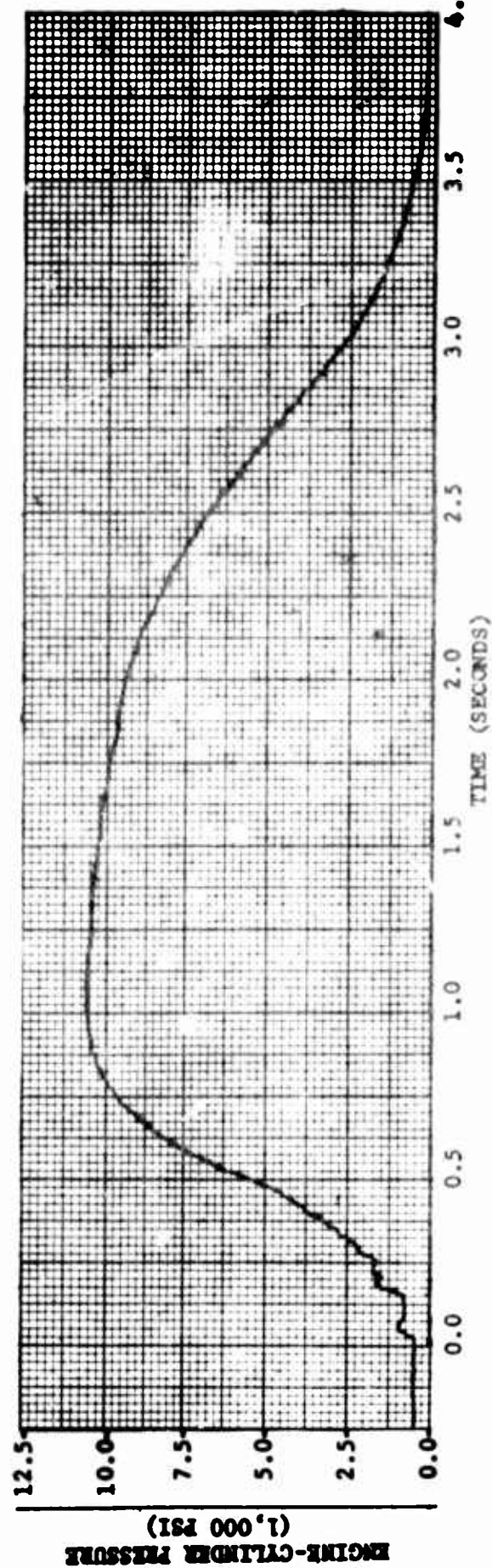
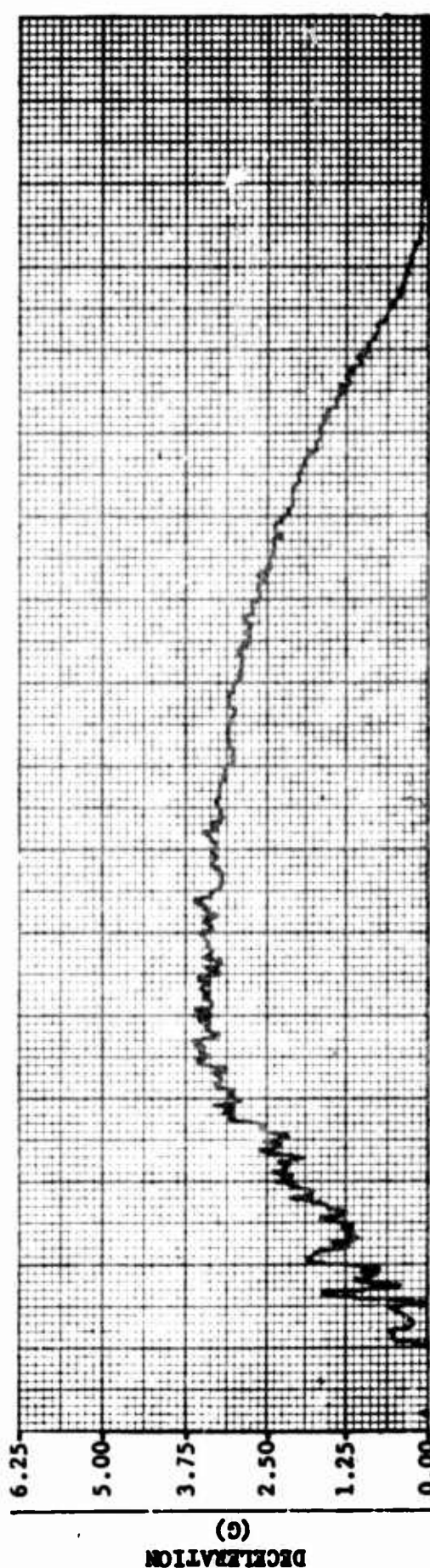
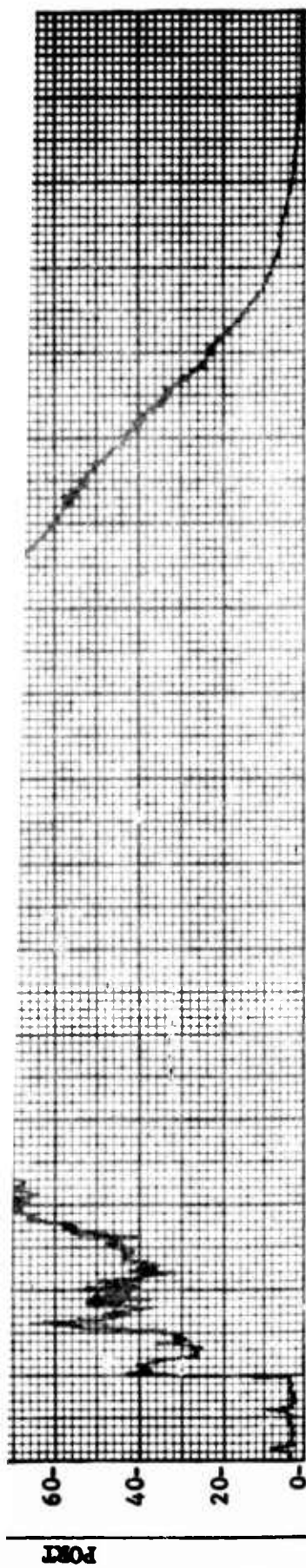
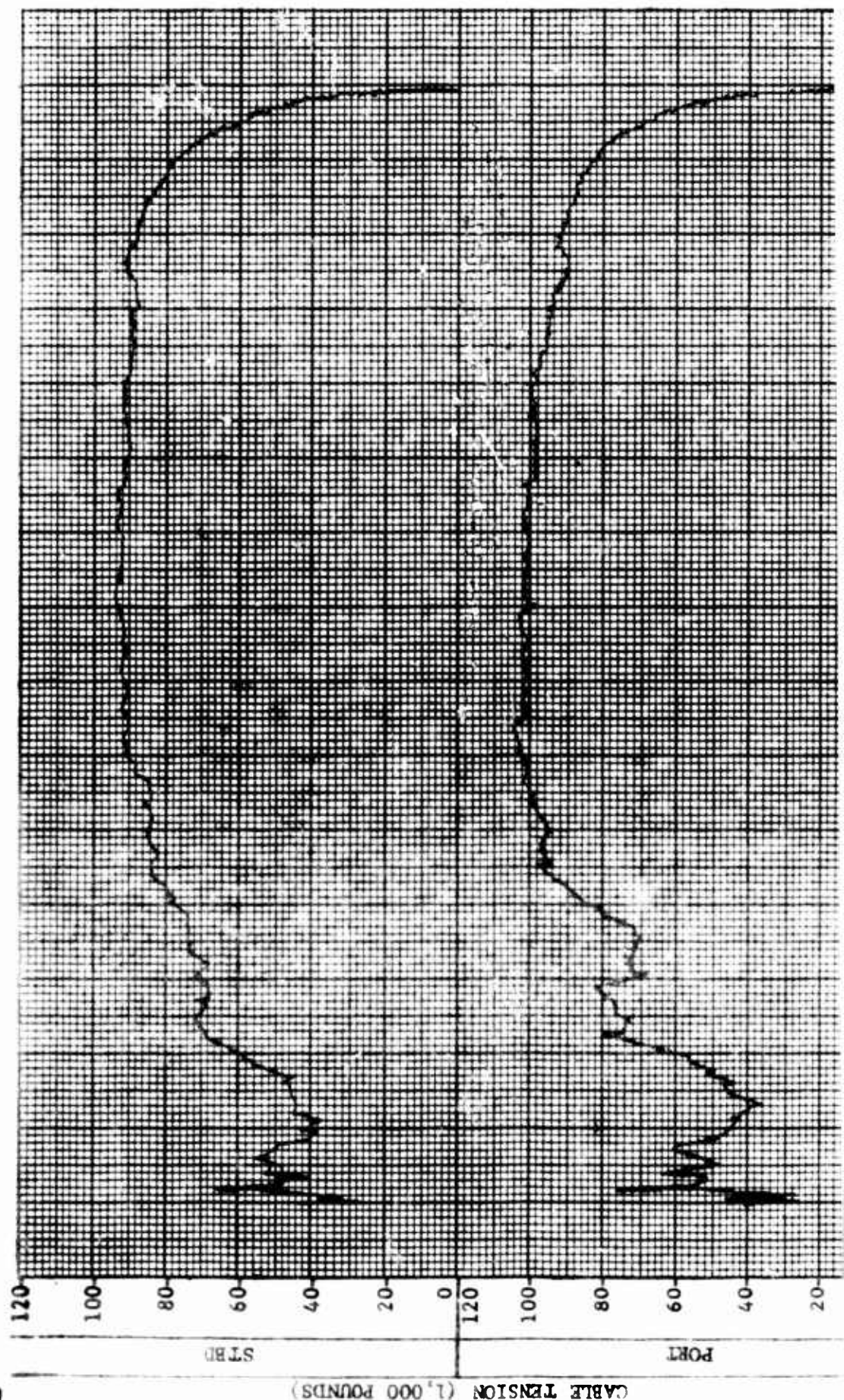
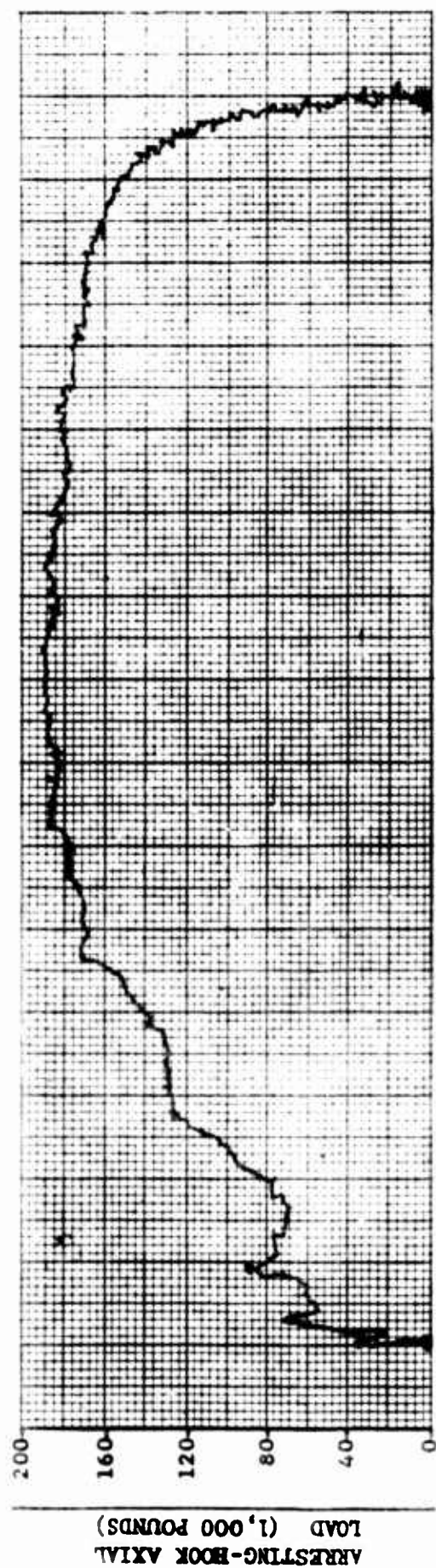


Figure A1 - Time History of Event 21652: ON-CENTER Arrestment of a 46,700-Pound A-3A Aircraft at an Engaging Speed of 137 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers)

B

APPENDIX A - TIME HISTORIES OF HIGH-ENERGY, ON-CENTER ARRESTMENTS

<u>Figure No.</u>	<u>Title</u>	<u>Page</u>
	Aircraft and Arresting-Gear Parameters versus Time and Engine Ram Stroke	
	48,700- to 50,000-Pound A-3A Aircraft; Arresting Gear Configured:	
A1	With Sheave Dampers.....	A-2
A2	Without Sheave Dampers.....	A-4
	40,600- to 42,000-Pound A-3A Aircraft; Arresting Gear Configured:	
A3	Without Sheave Dampers.....	A-6
A4	With Sheave Dampers, Using a Single Weight Setting....	A-8
A5	With Sheave Dampers.....	A-10
	12,000- to 14,400-Pound A-4B Aircraft; Arresting Gear Configured:	
A6	With Sheave Dampers.....	A-12
A7	With Sheave Dampers.....	A-14
A8	Without Sheave Dampers.....	A-16
A9	Without Sheave Dampers.....	A-18
A10	With Sheave Dampers, Using a Single Weight Setting....	A-20
	30,800- to 32,800-Pound F-4A Aircraft; Arresting Gear Configured:	
A11	With Sheave Dampers.....	A-22
A12	Without Sheave Dampers.....	A-24
A13	With Sheave Dampers, Using a Single Weight Setting....	A-26
	21,000- to 22,000-Pound F-8D Aircraft; Arresting Gear Configured:	
A14	With Sheave Dampers.....	A-28
A15	With Sheave Dampers, Using a Single Weight Setting....	A-30



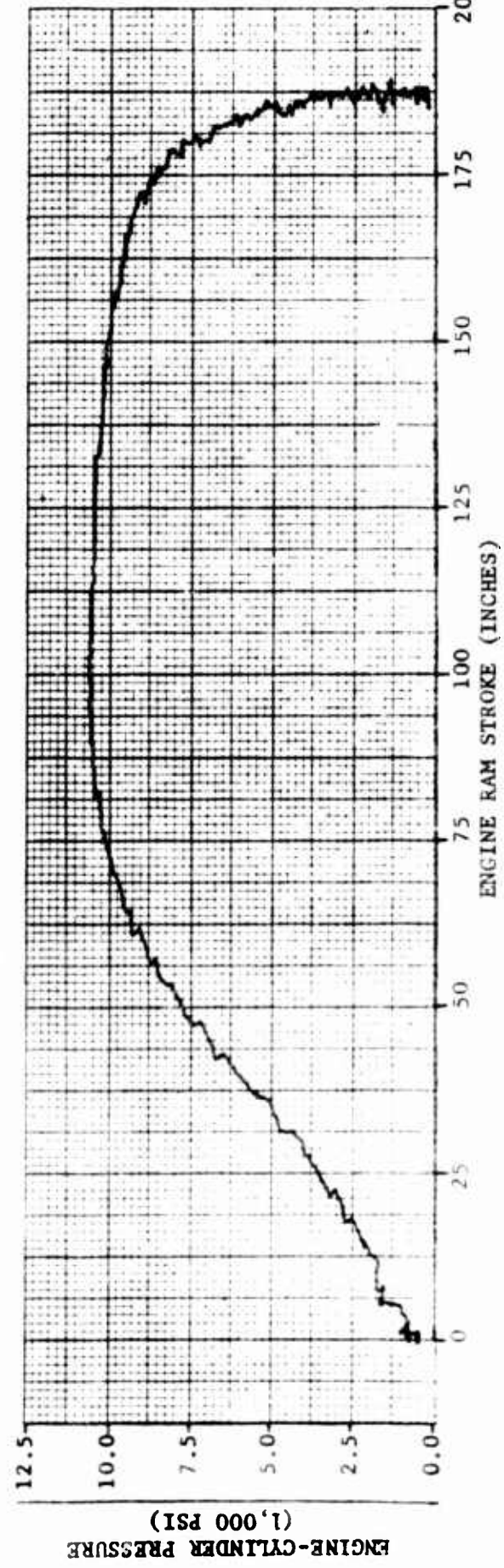
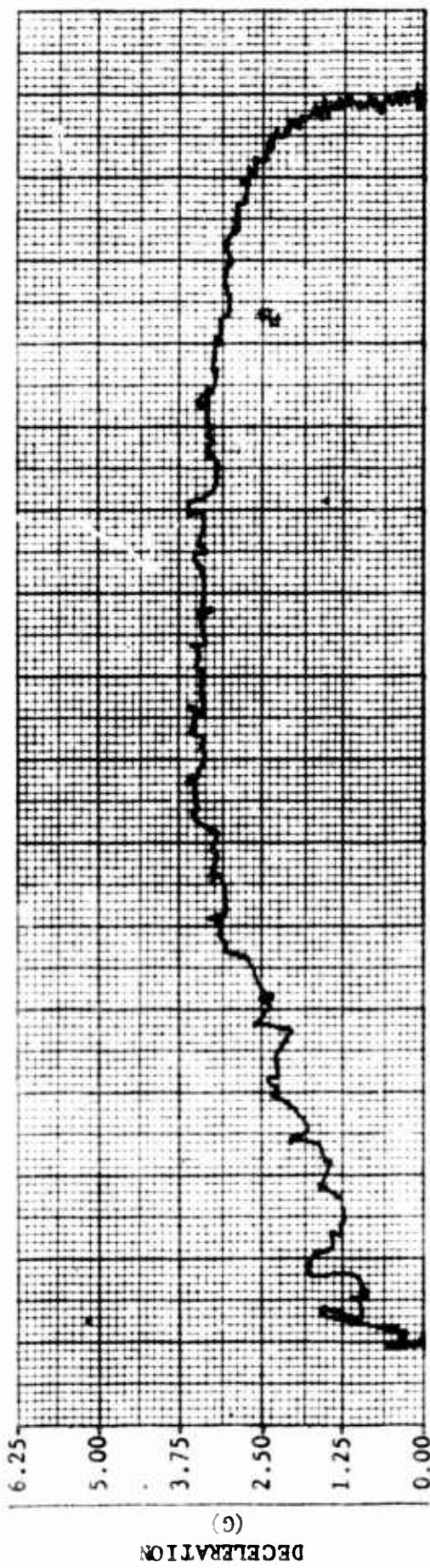
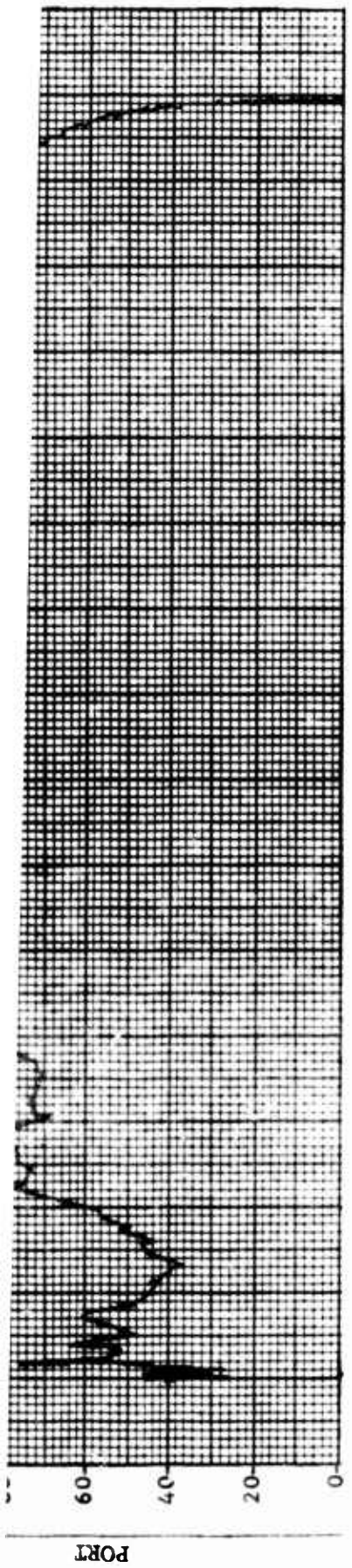
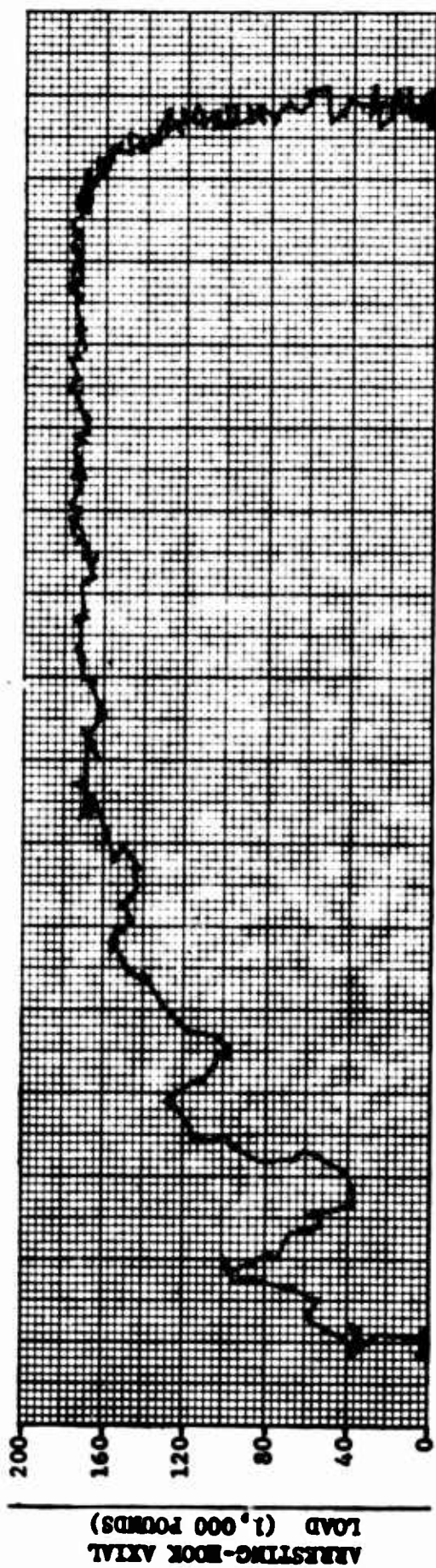
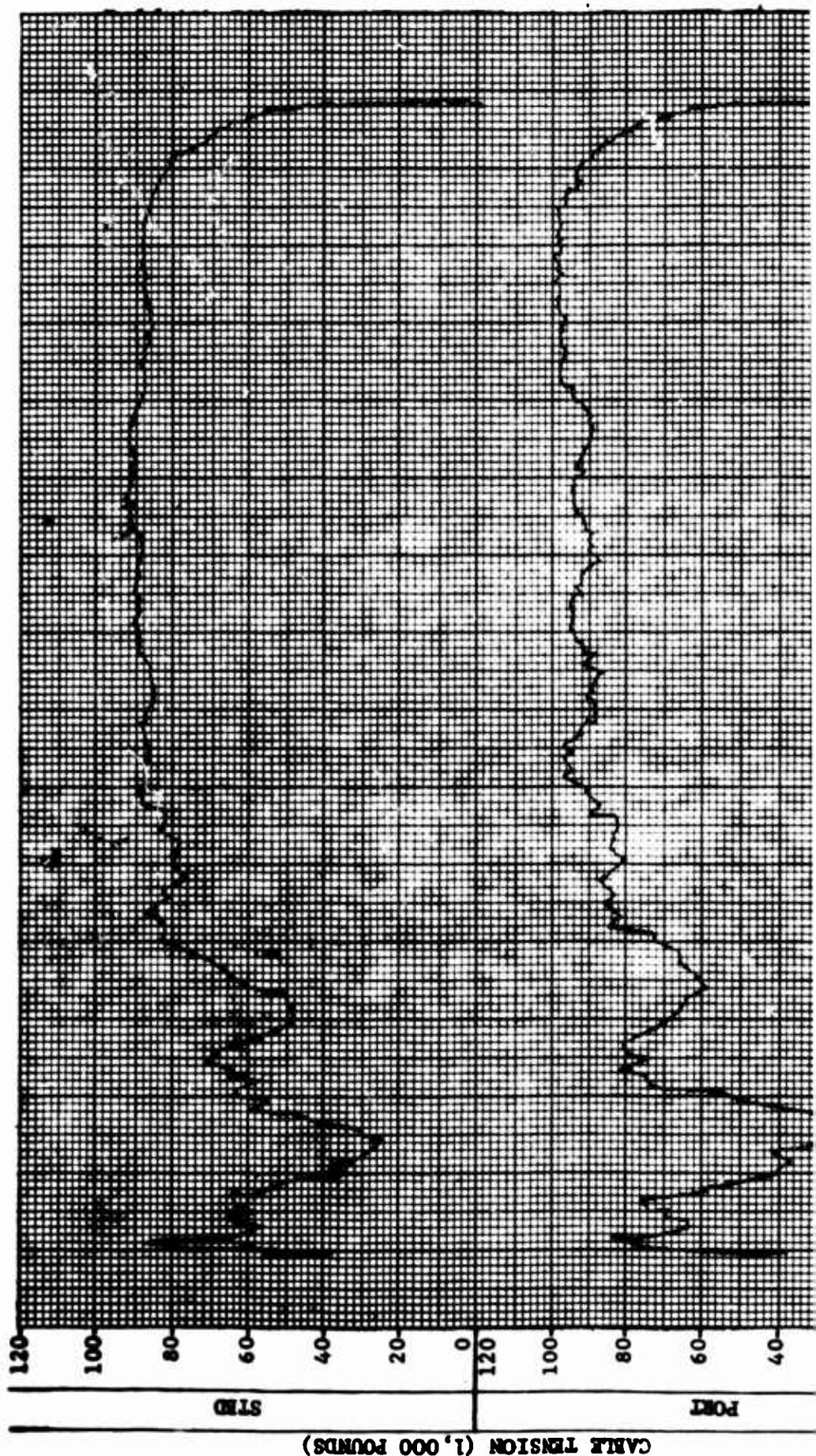


Figure 11 continued



A



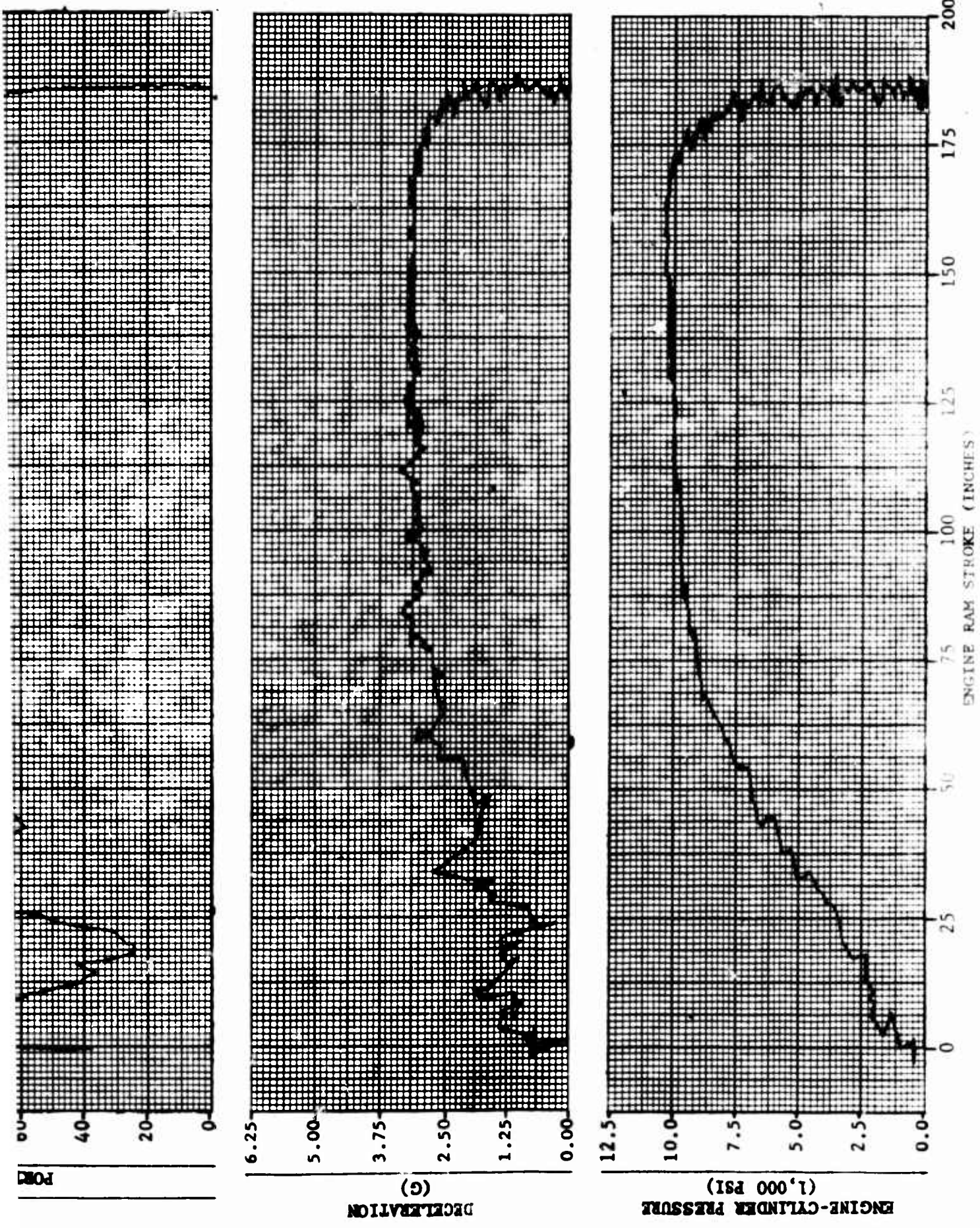
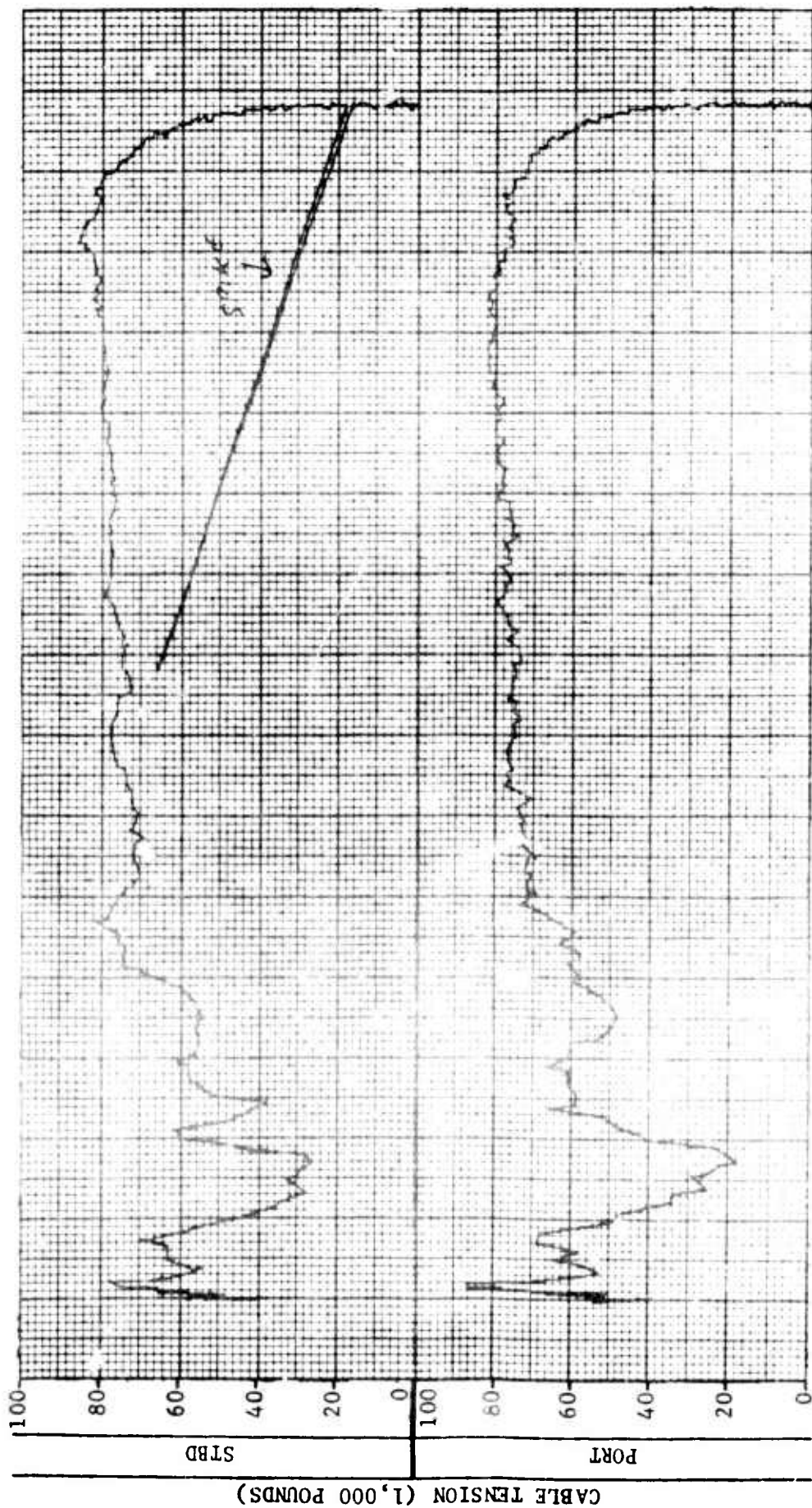
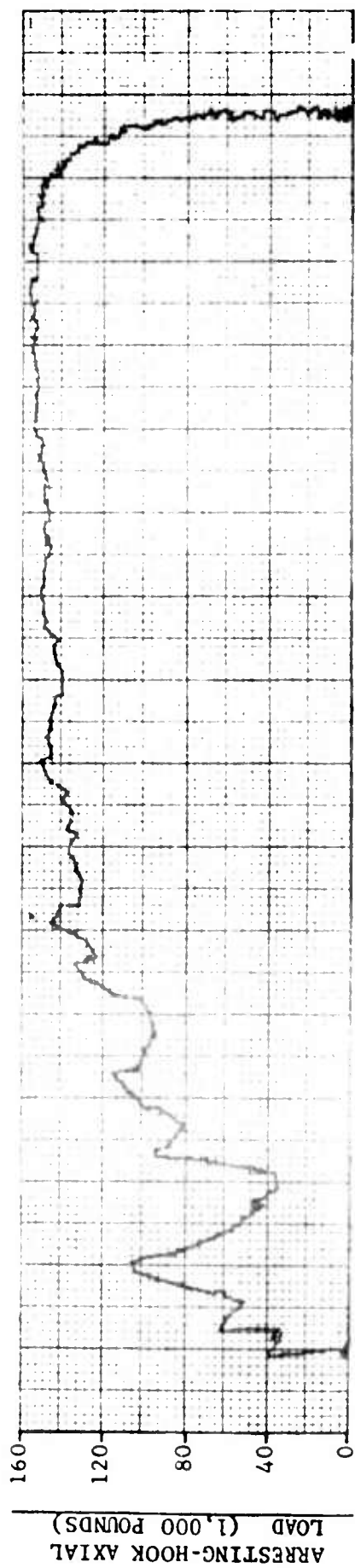


Figure A2 - Continued



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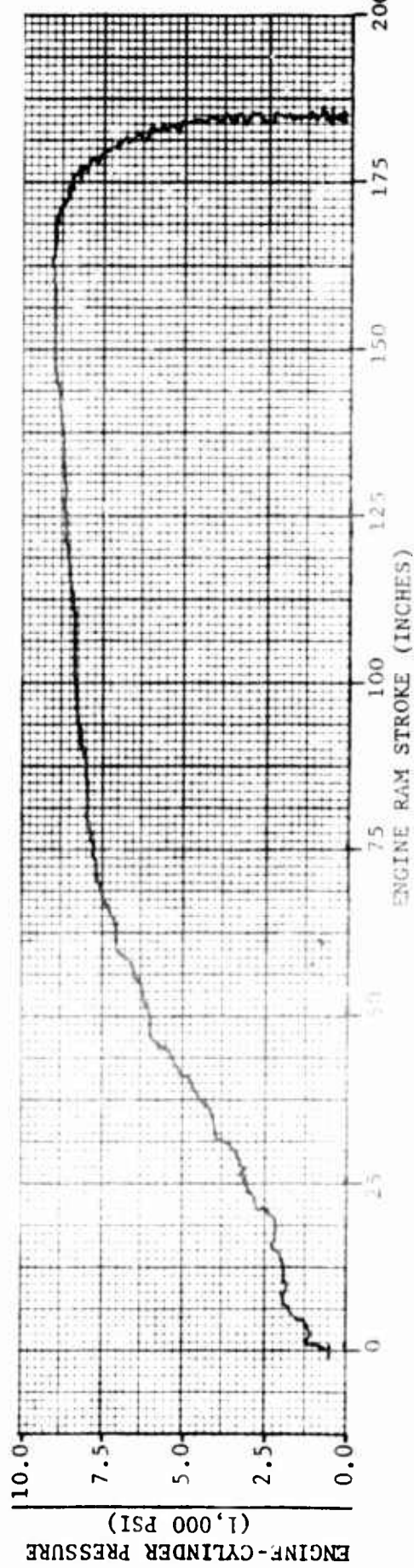
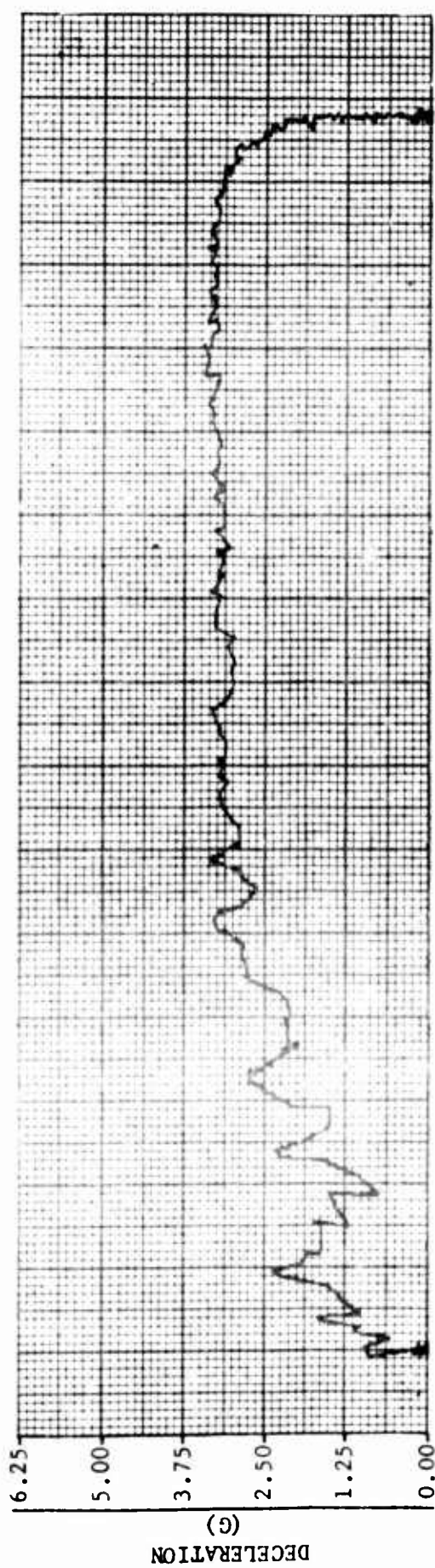
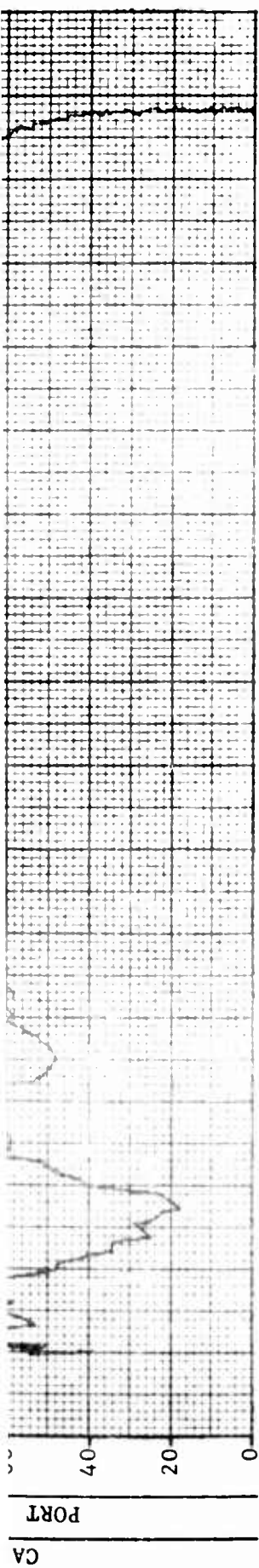
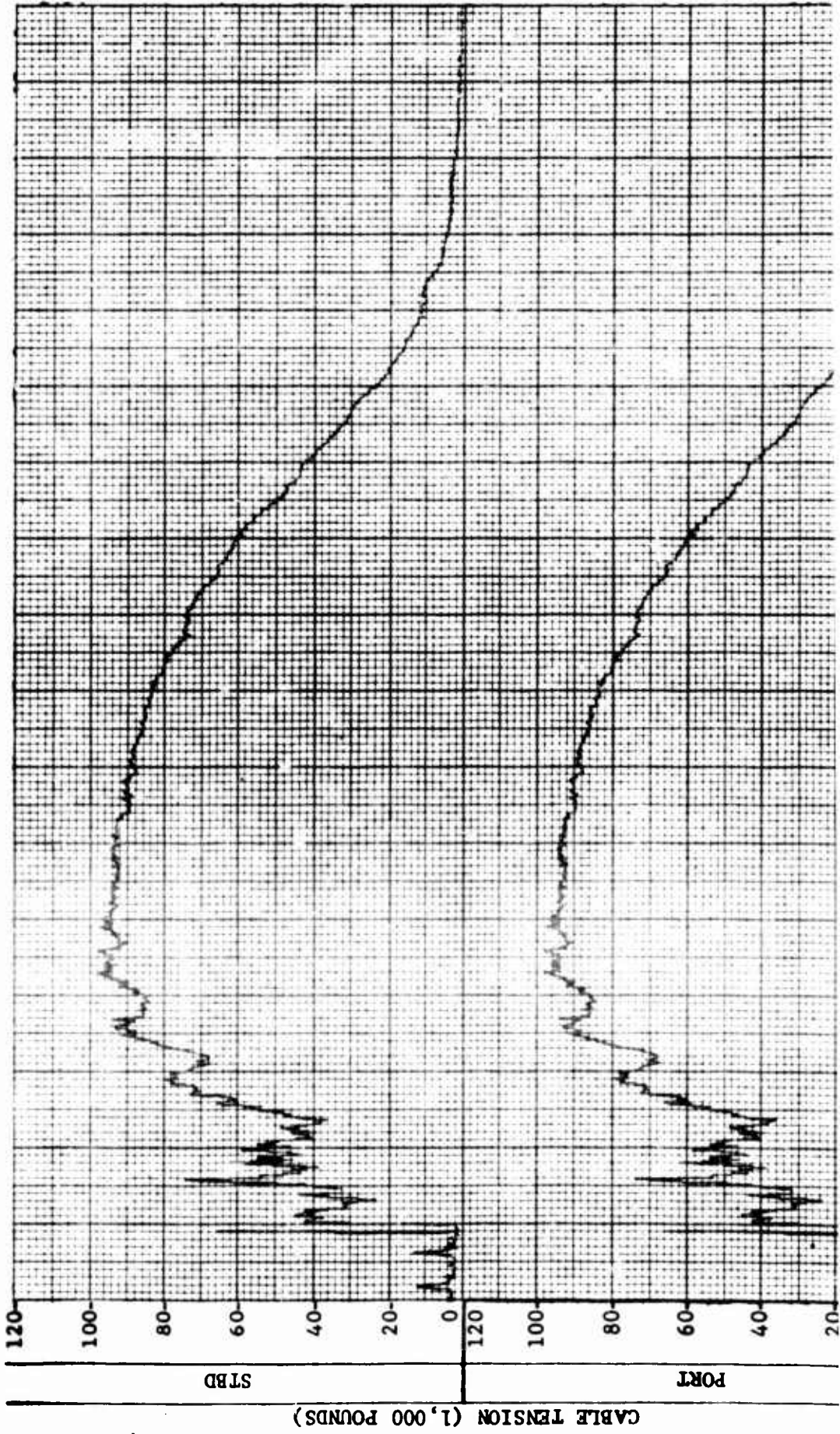
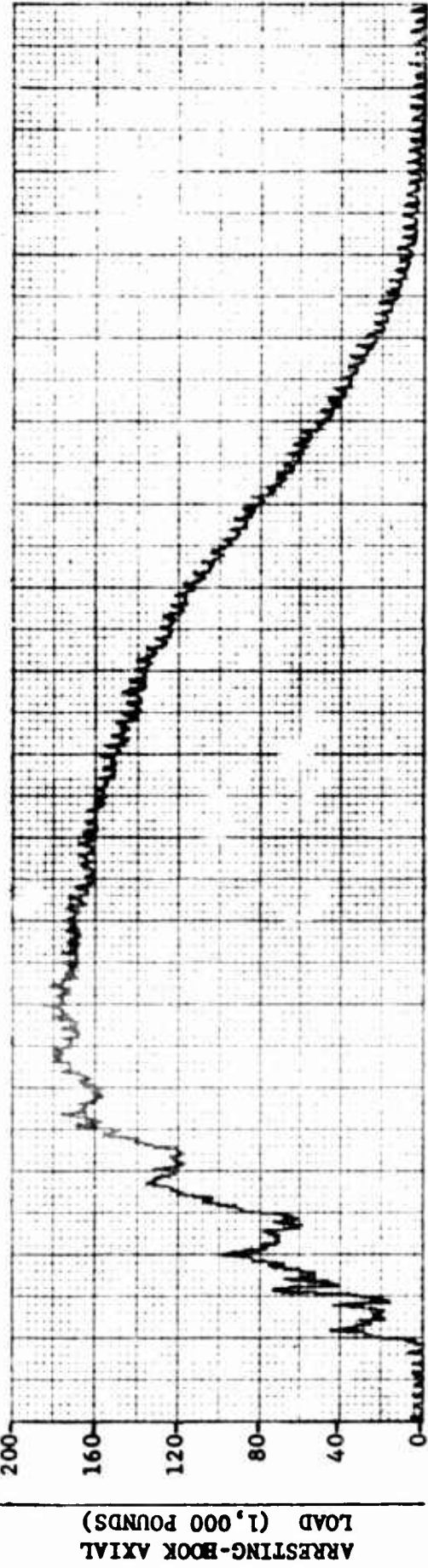


Figure A3 - Continued



H

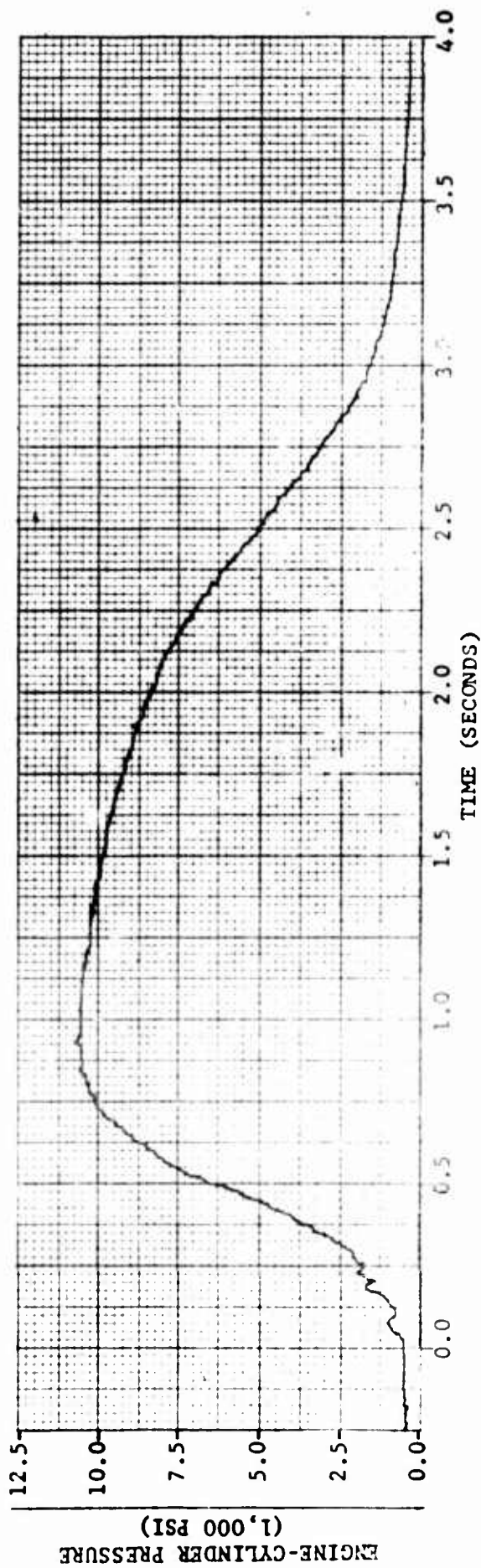
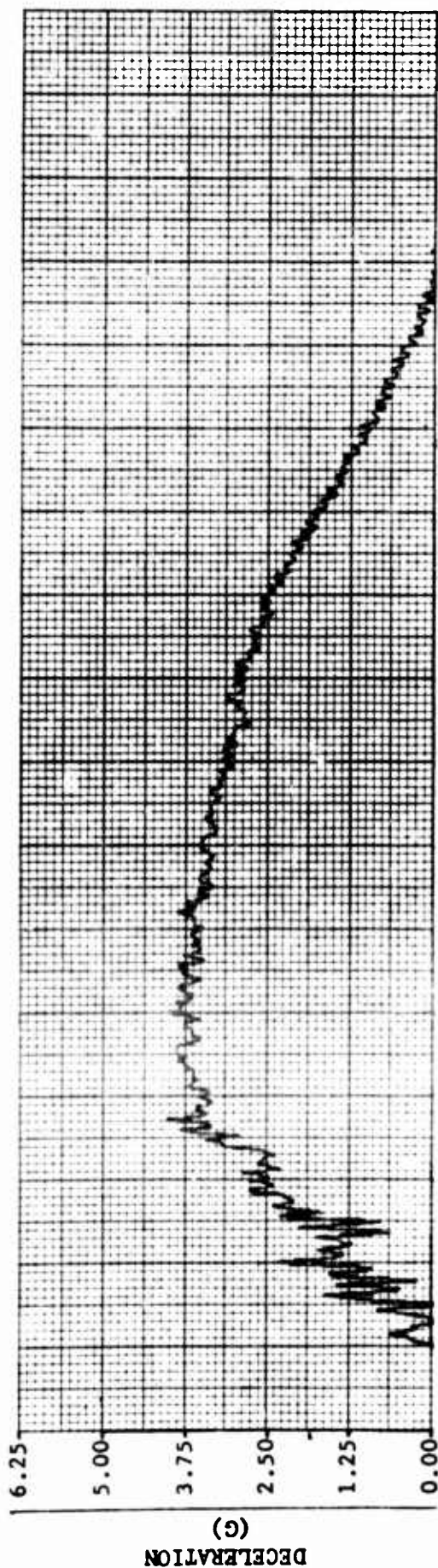
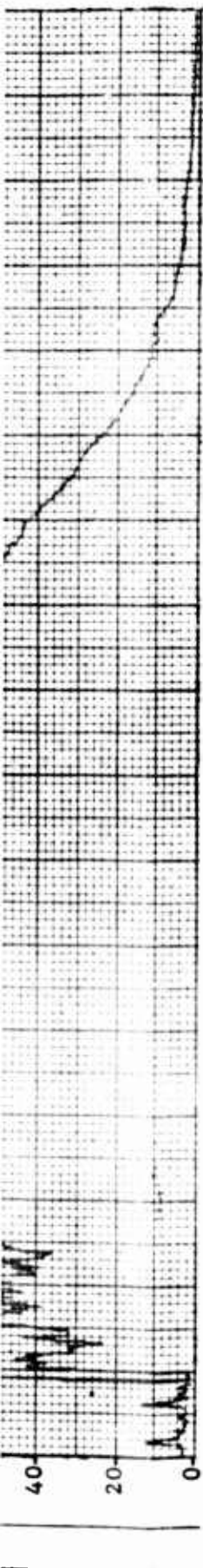
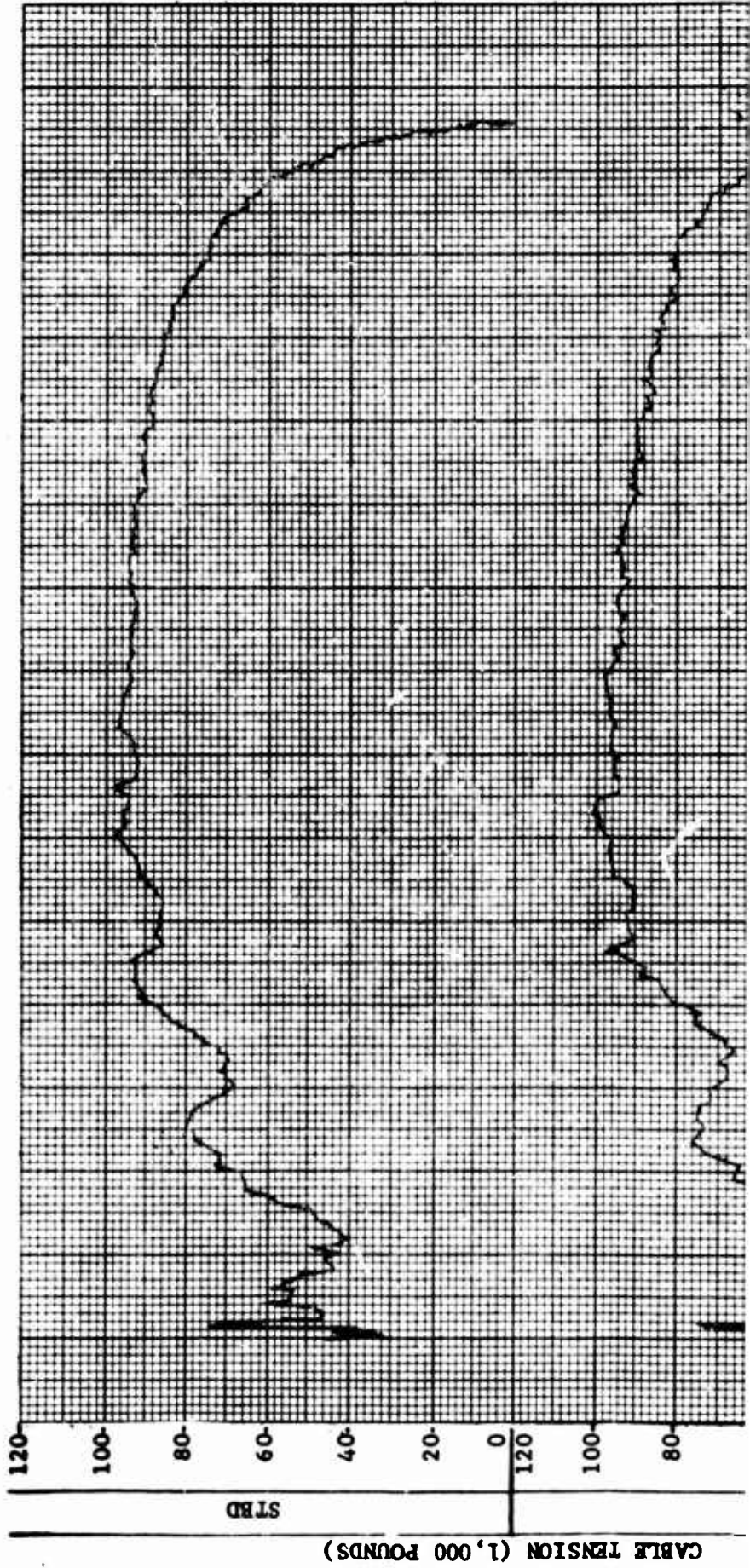
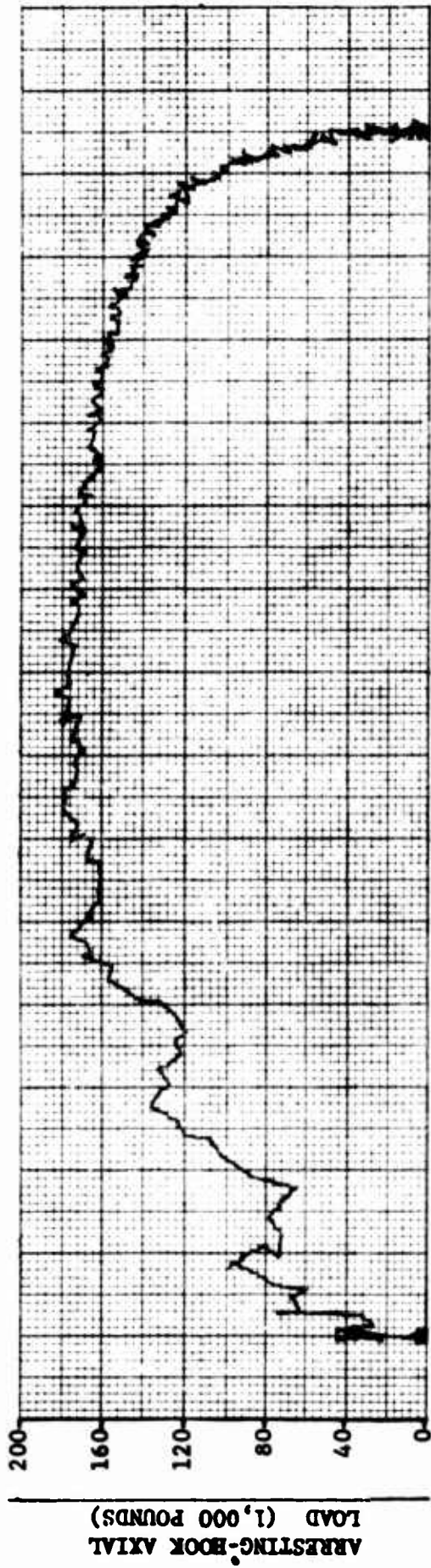


Figure 24 - 25. Plot of Deceleration and Engine-Cylinder Pressure vs. Time for a 40,600-Pound Aircraft at an Engaging Speed of 146 Knots (Mark 7 Mod)



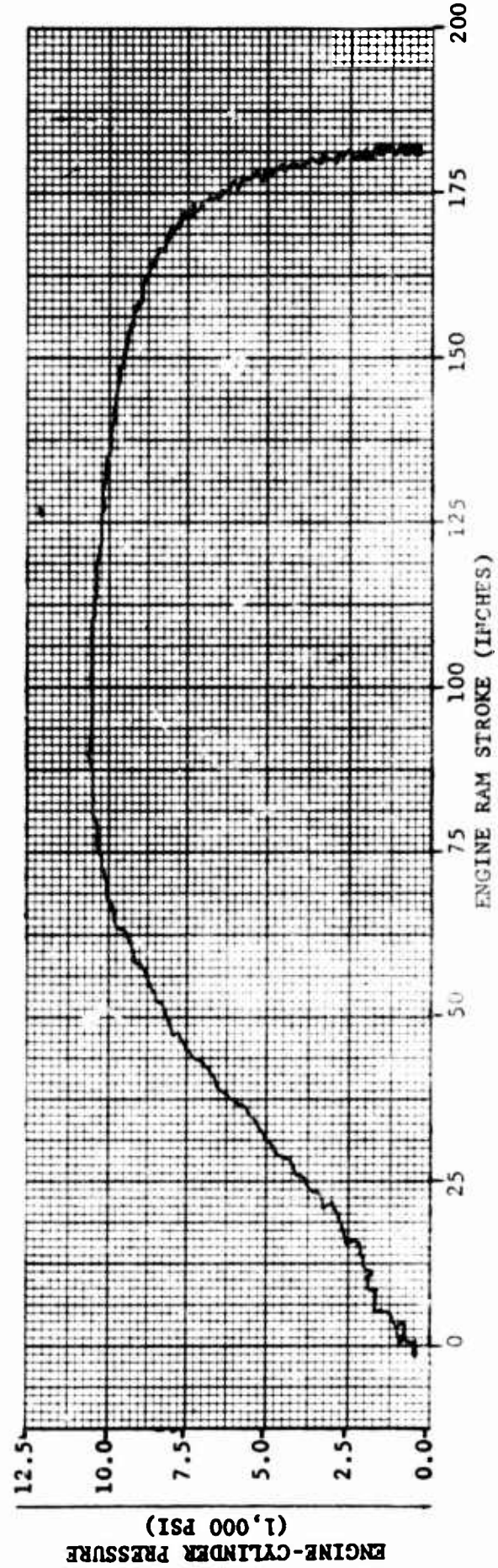
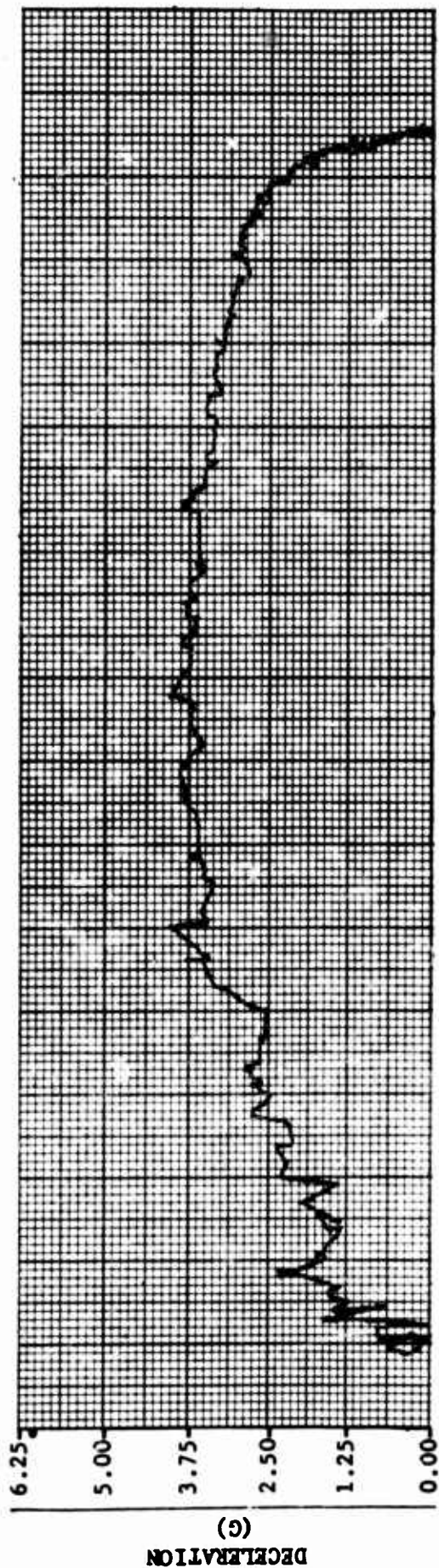
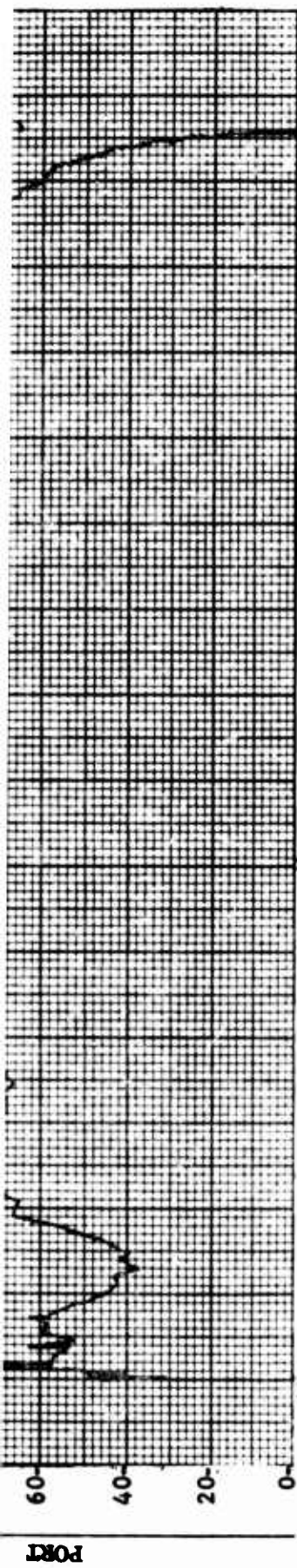
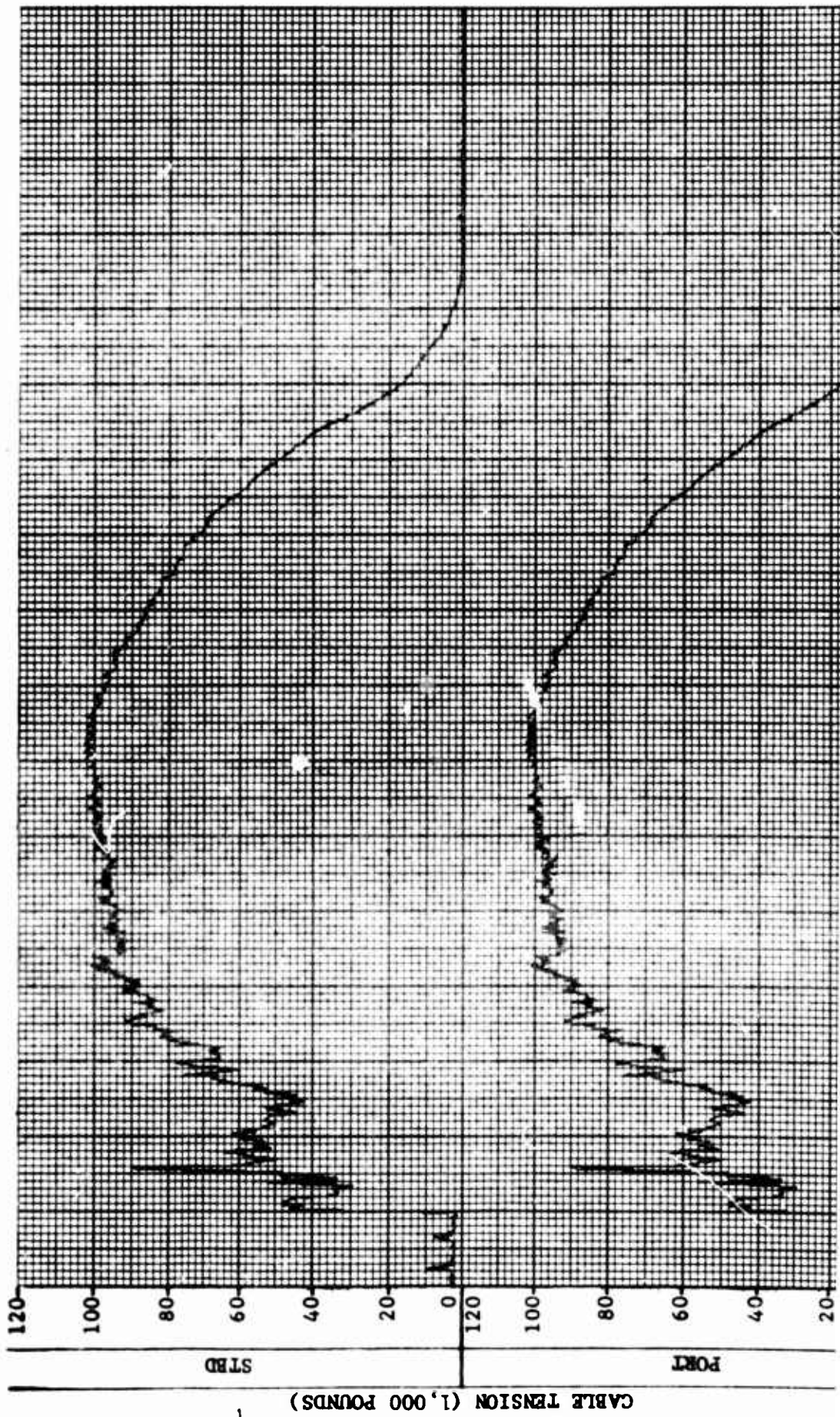
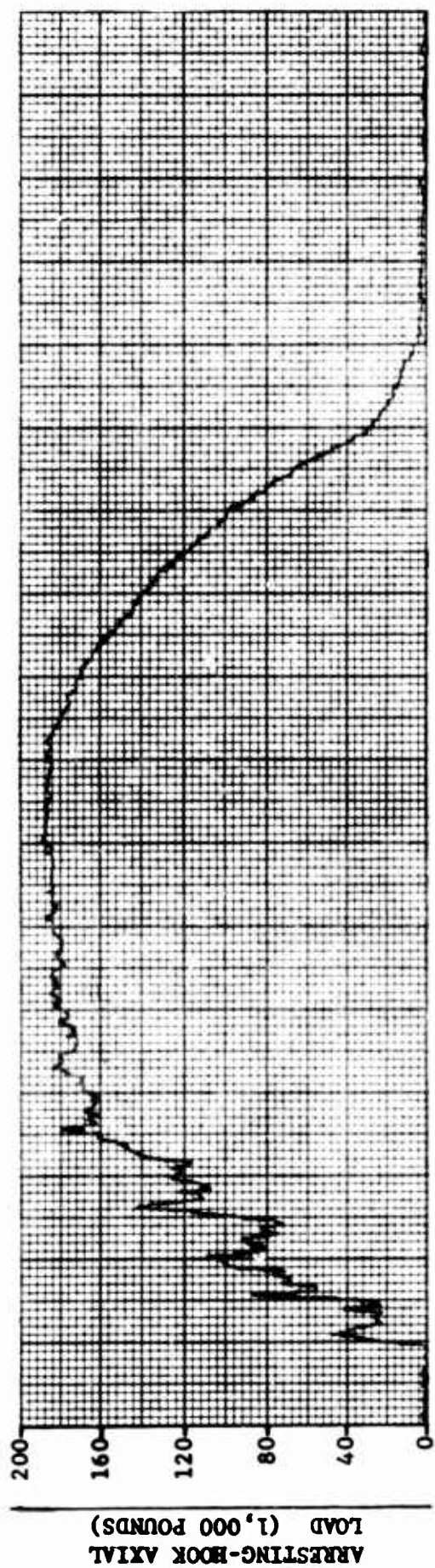


Figure A4 - Continued



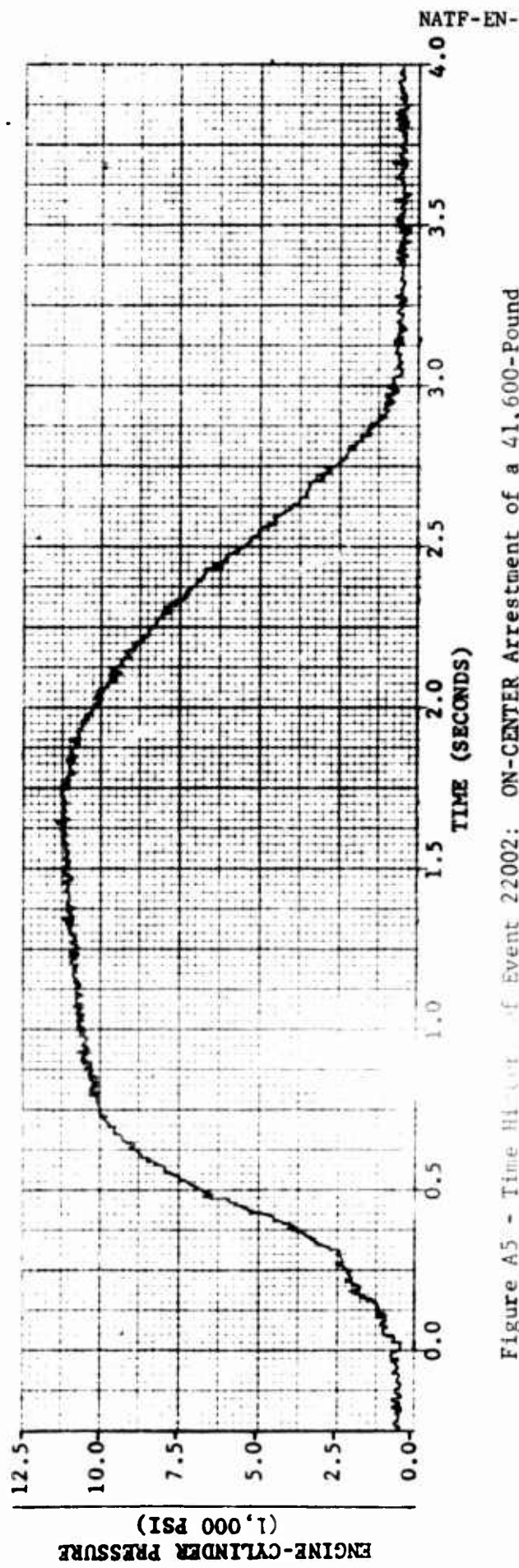
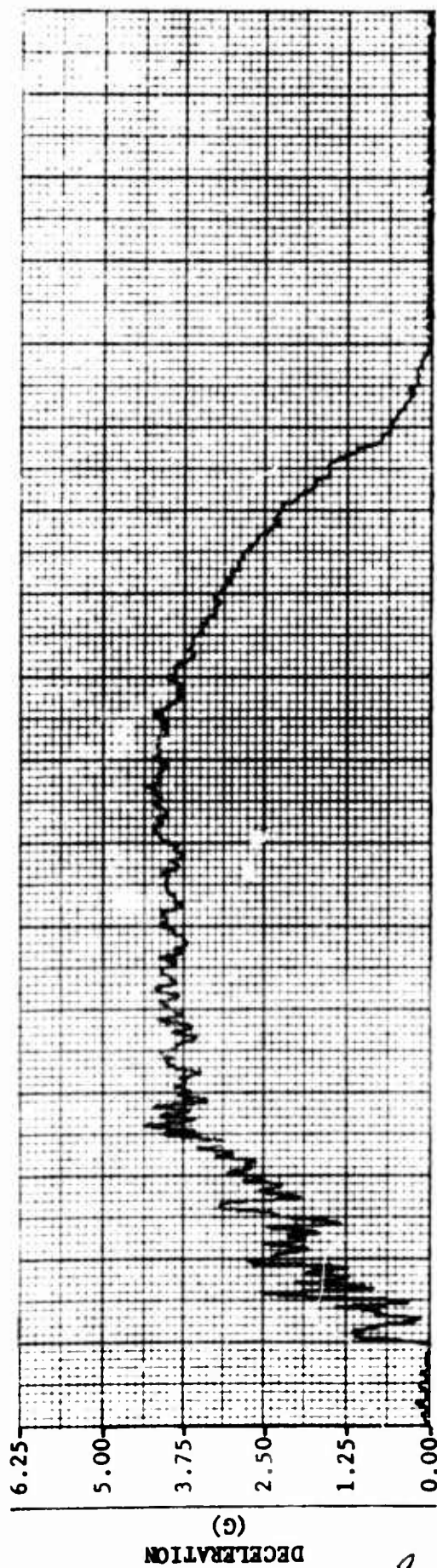
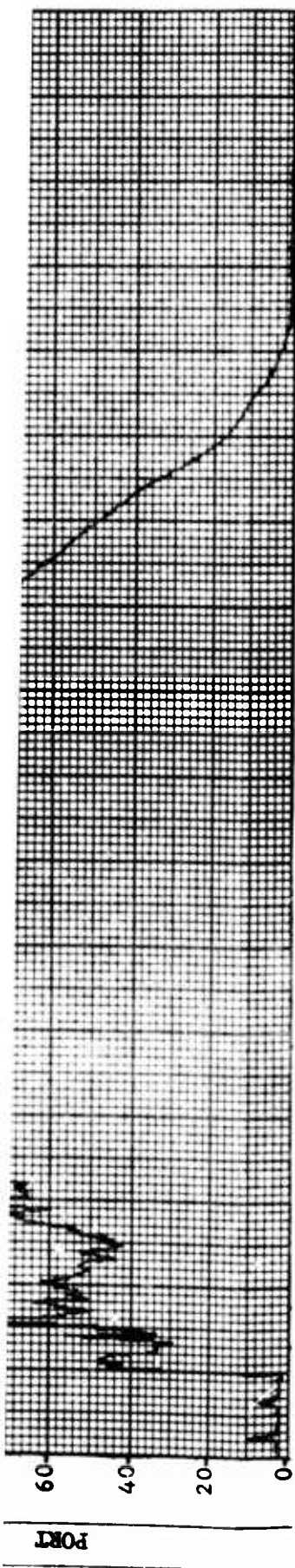
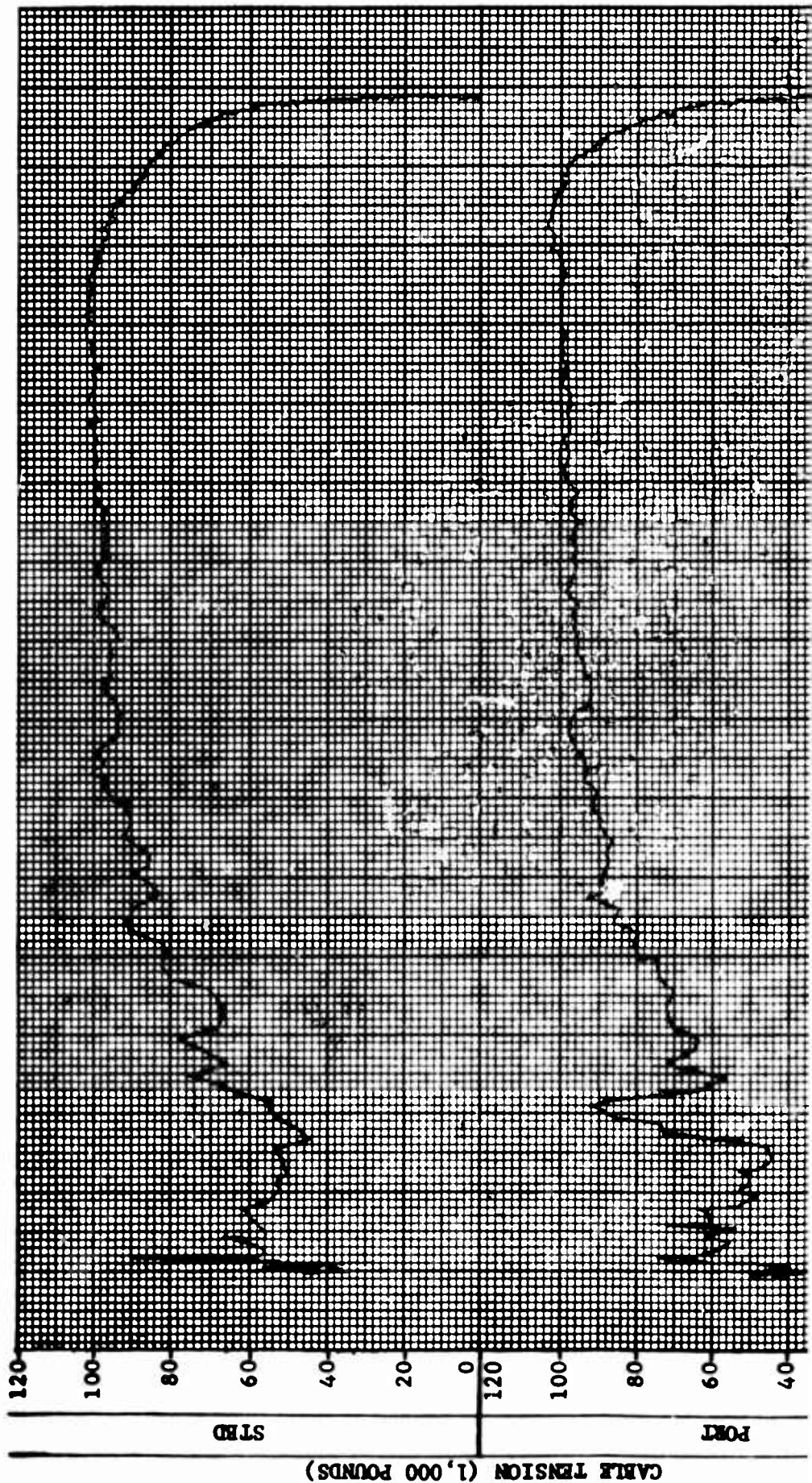
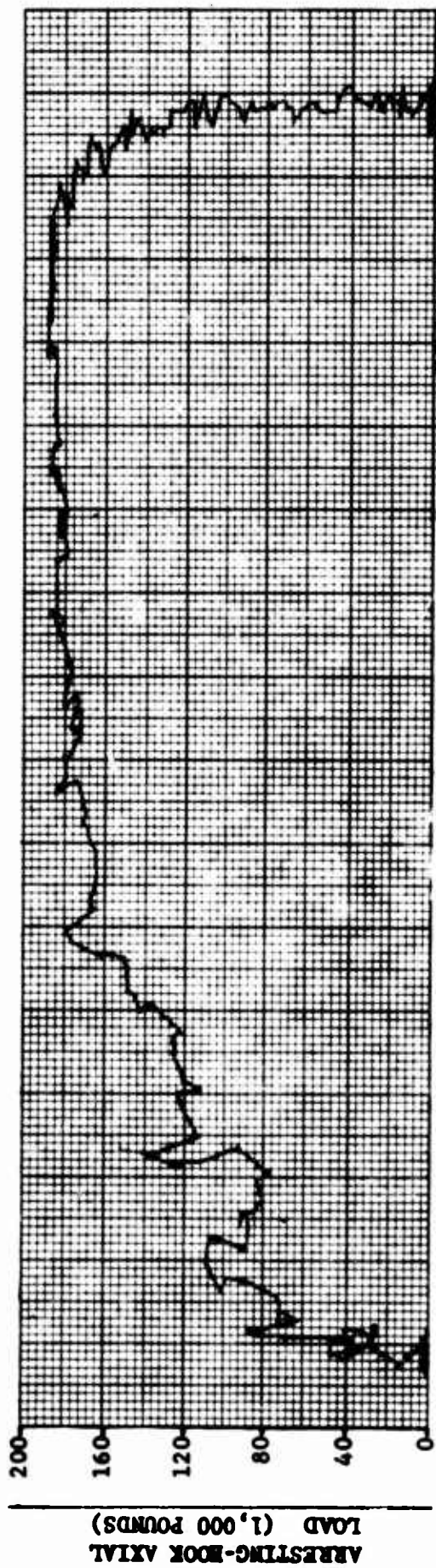


Figure A5 - Time History of Event 22002: ON-CENTER Arrestment of a 41,600-Pound A-3A Aircraft at an Engaging Speed of 154 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers)

B



A

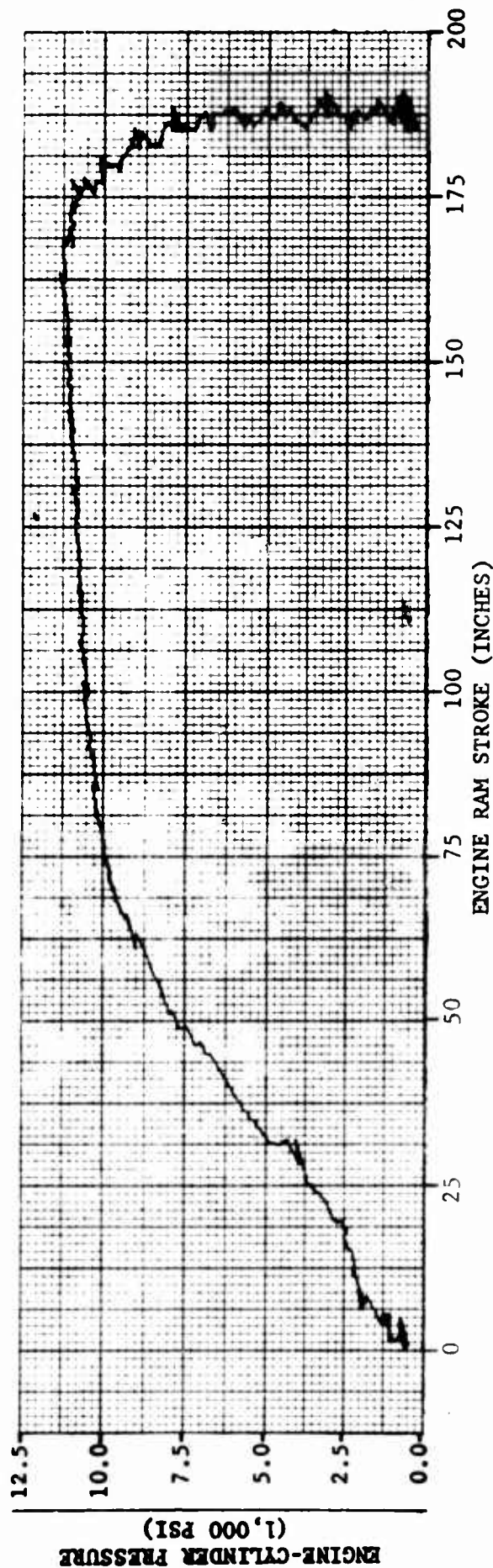
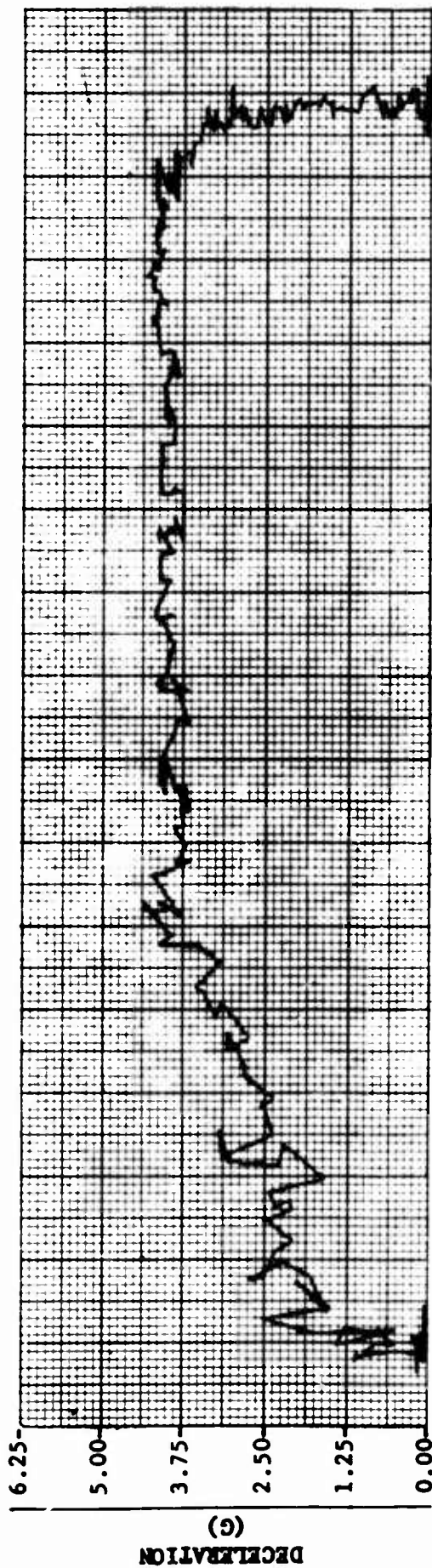
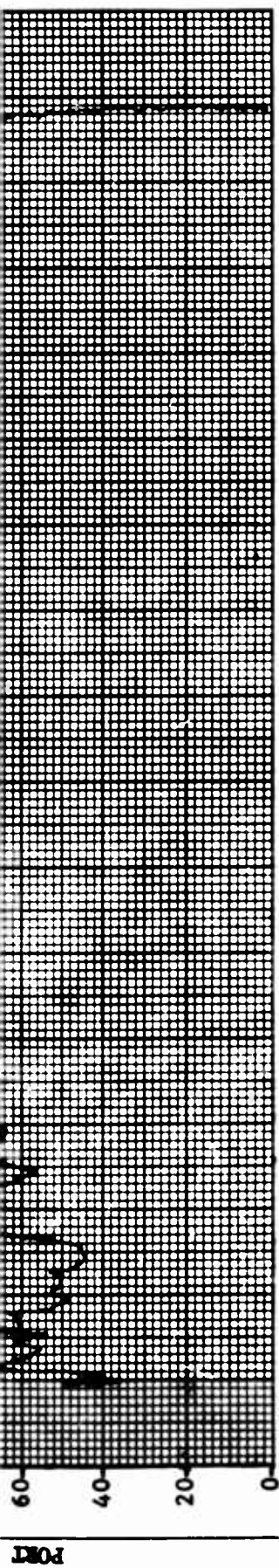
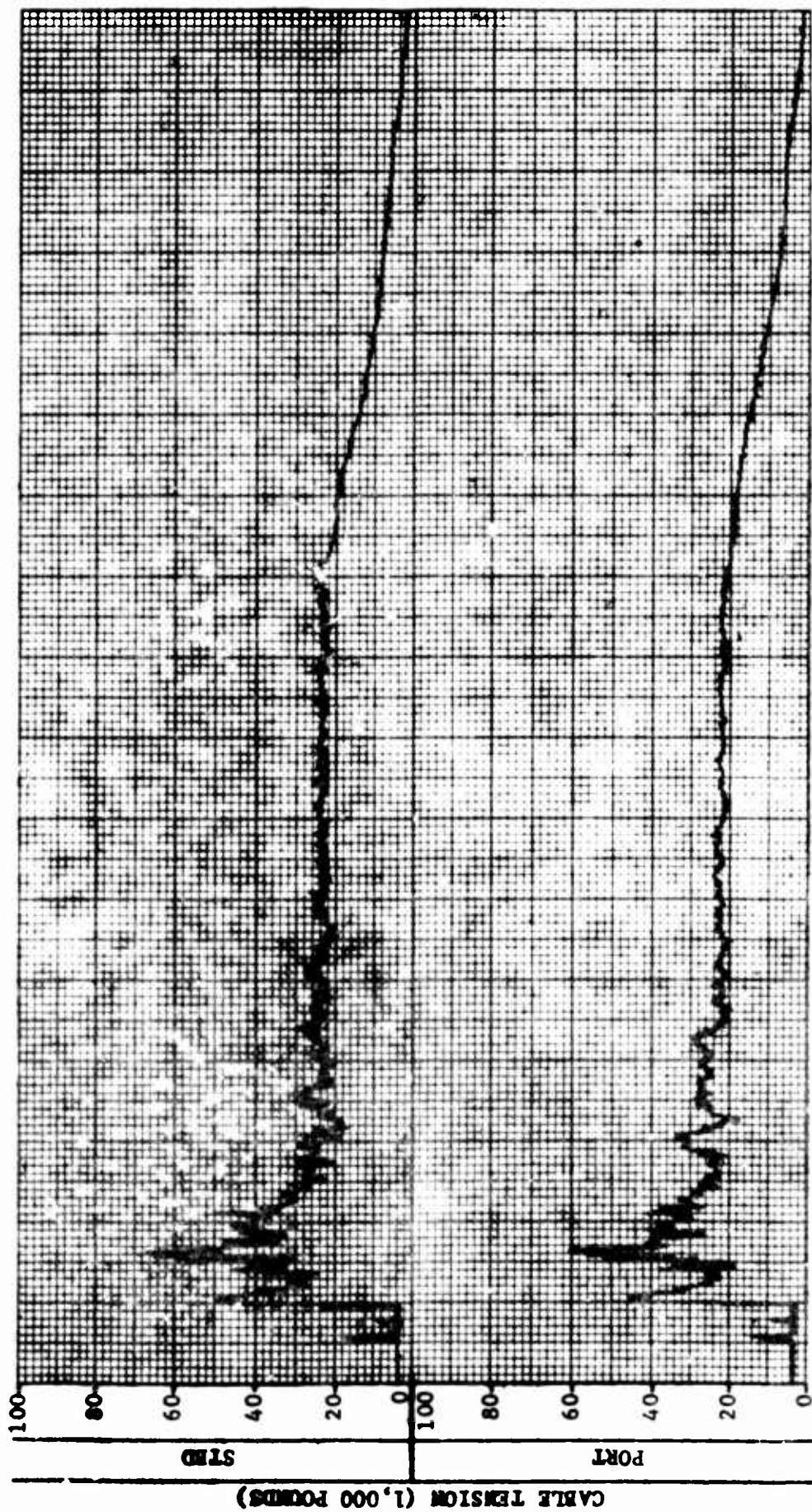
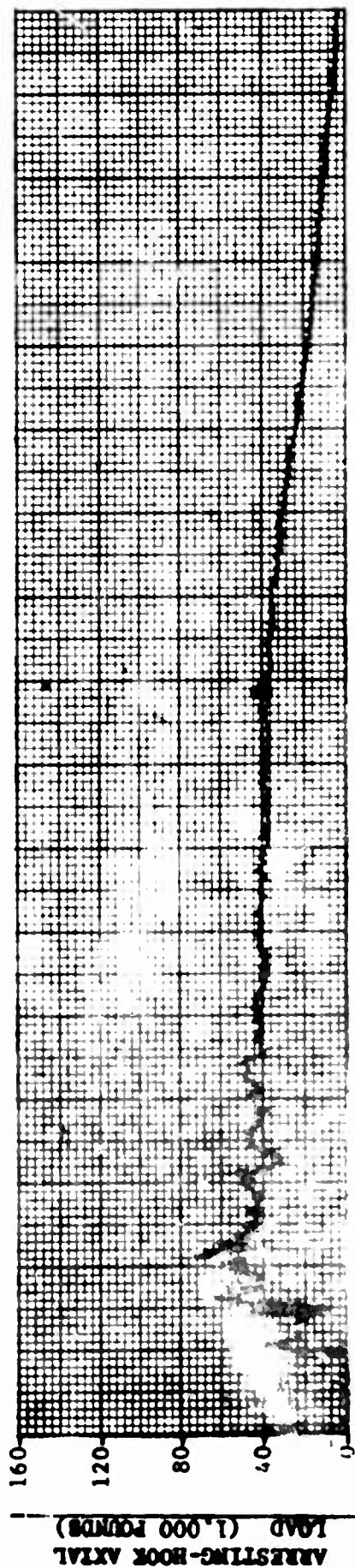


Figure A5 - Continued



A

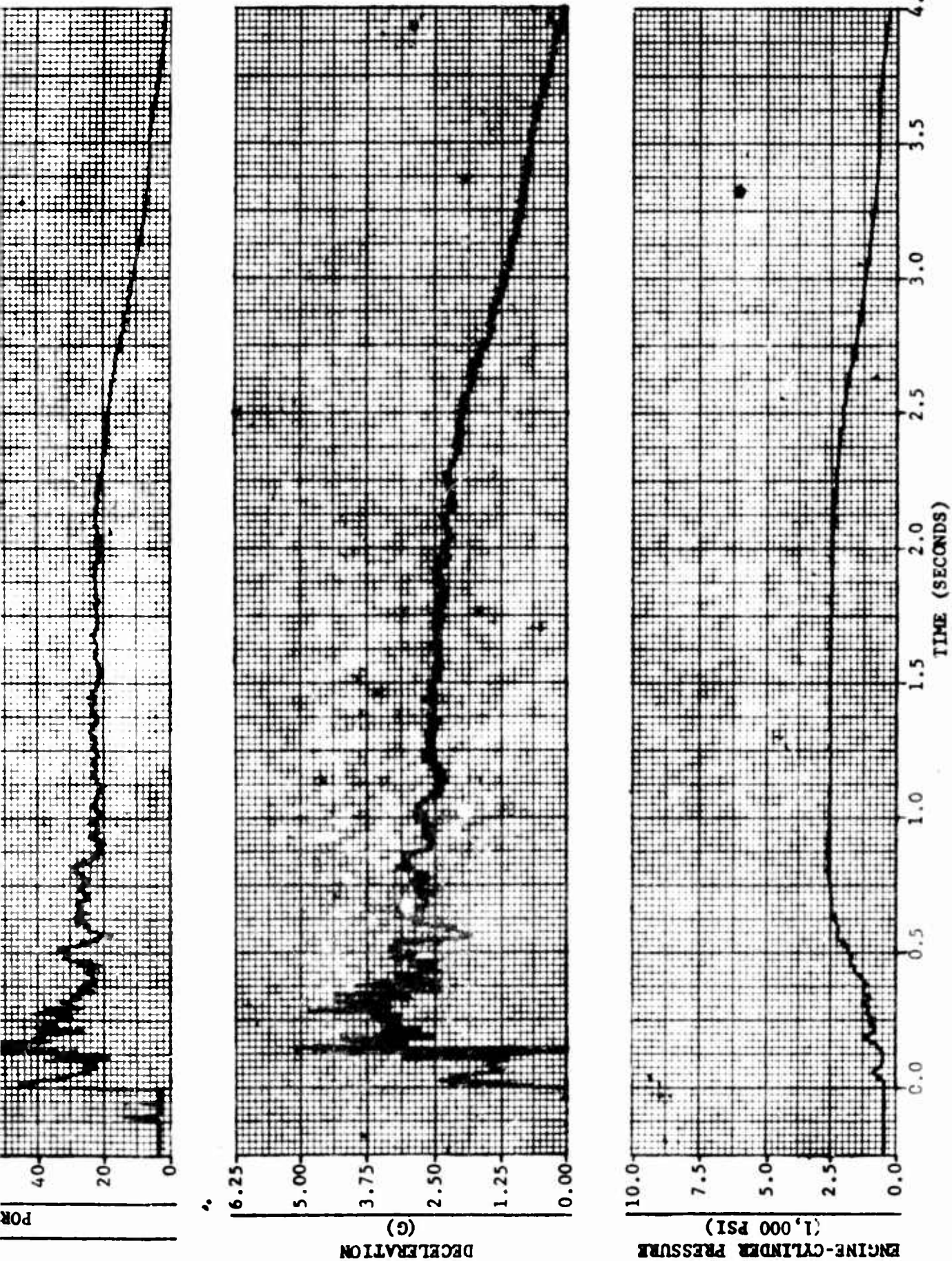
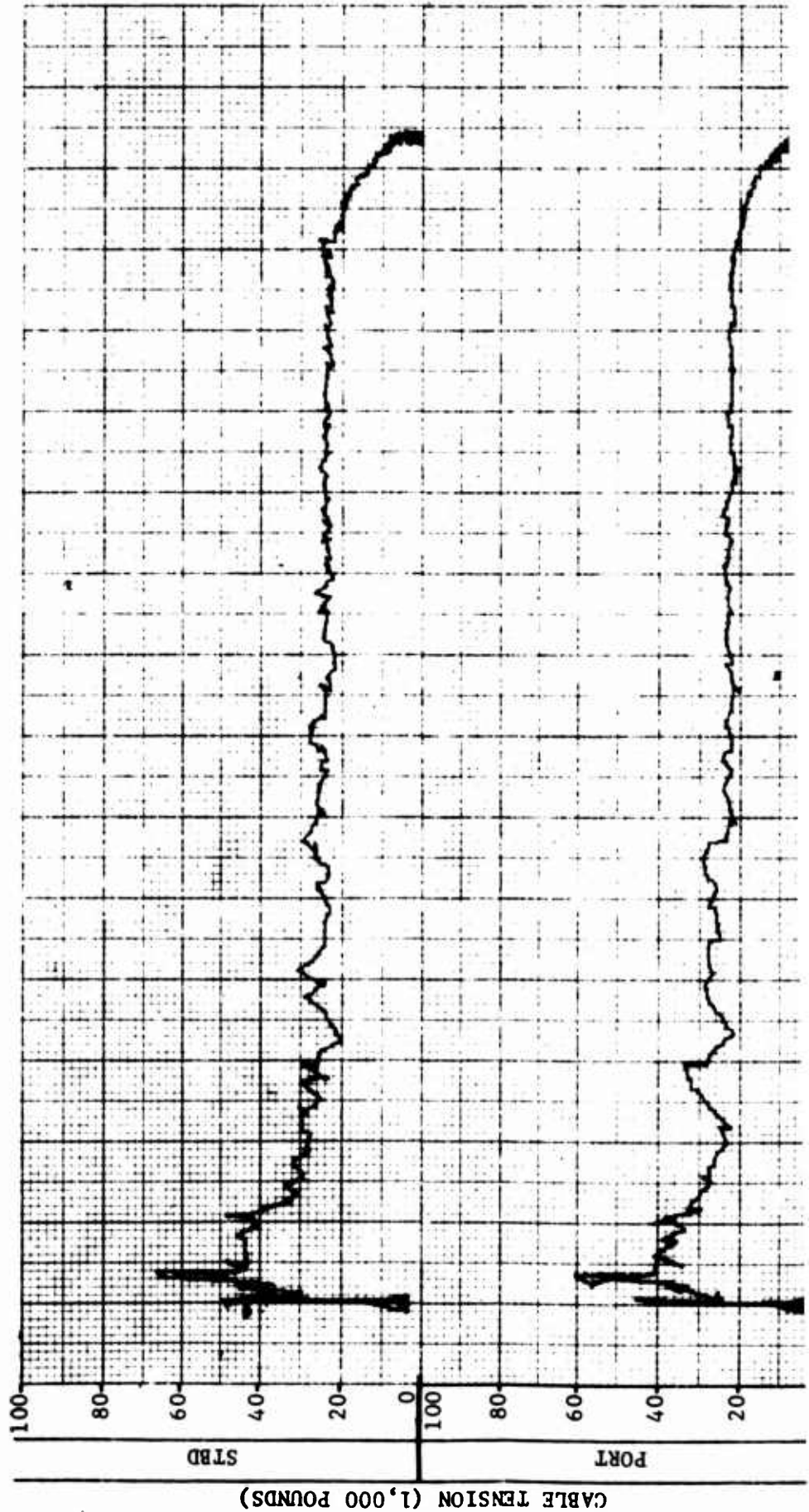
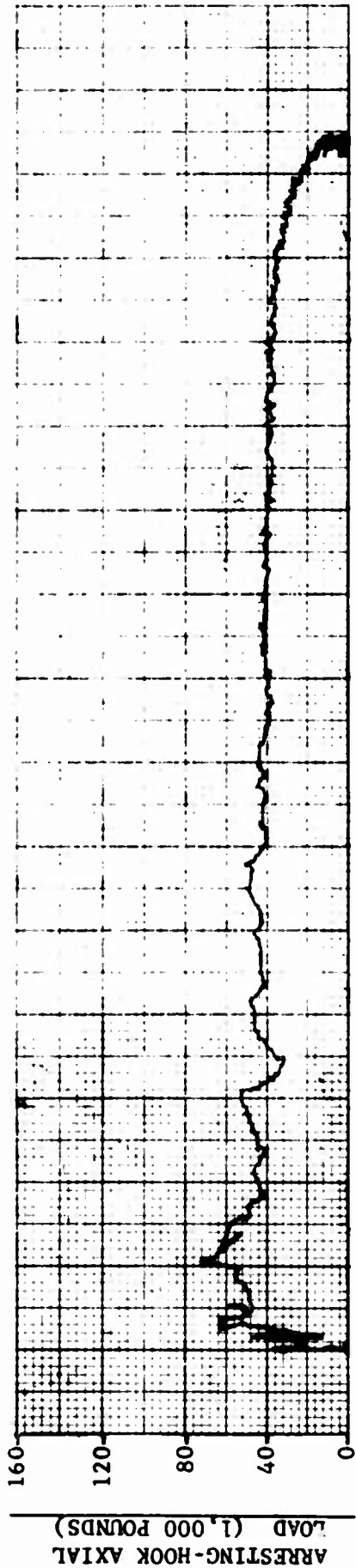


Figure A6 - Time History of Event 21961: ON-CENTER Arrestment of a 13,500-Pound A-4B Aircraft at an Engaging Speed of 137 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers)



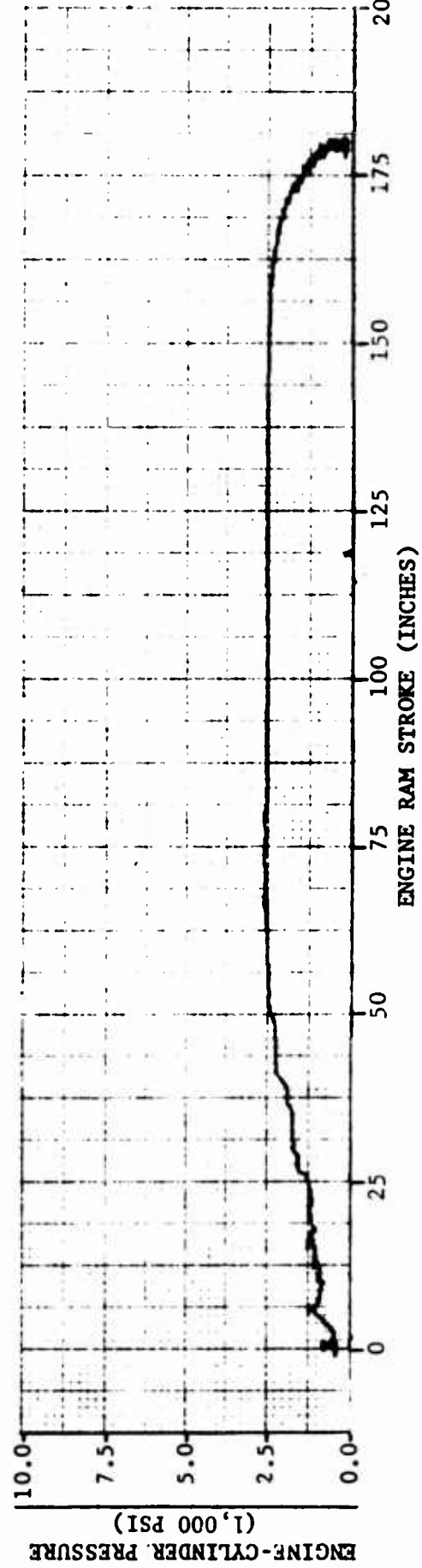
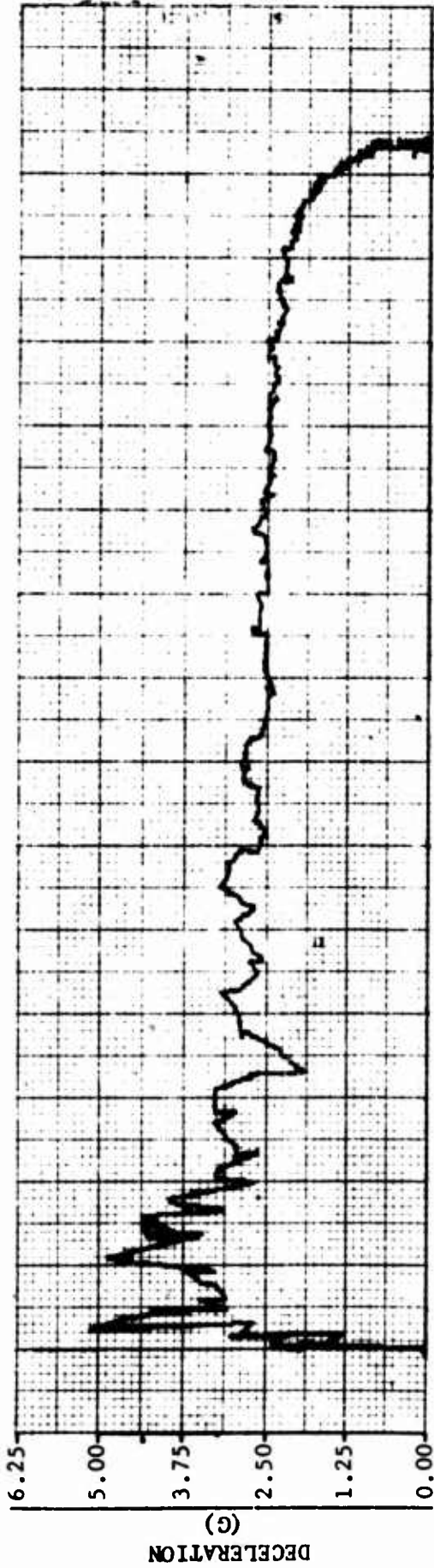
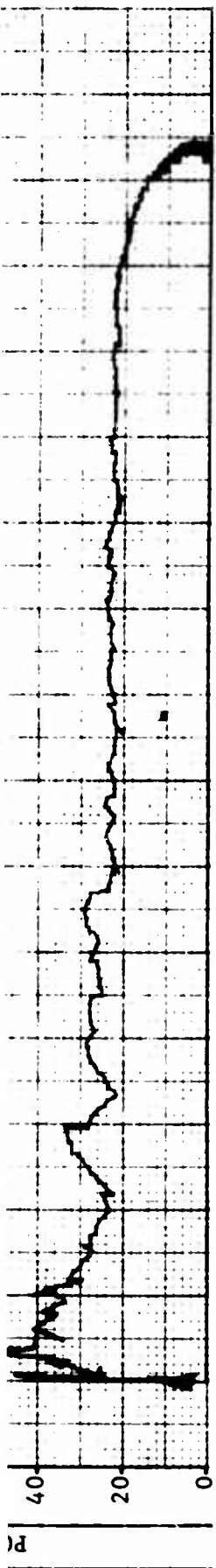
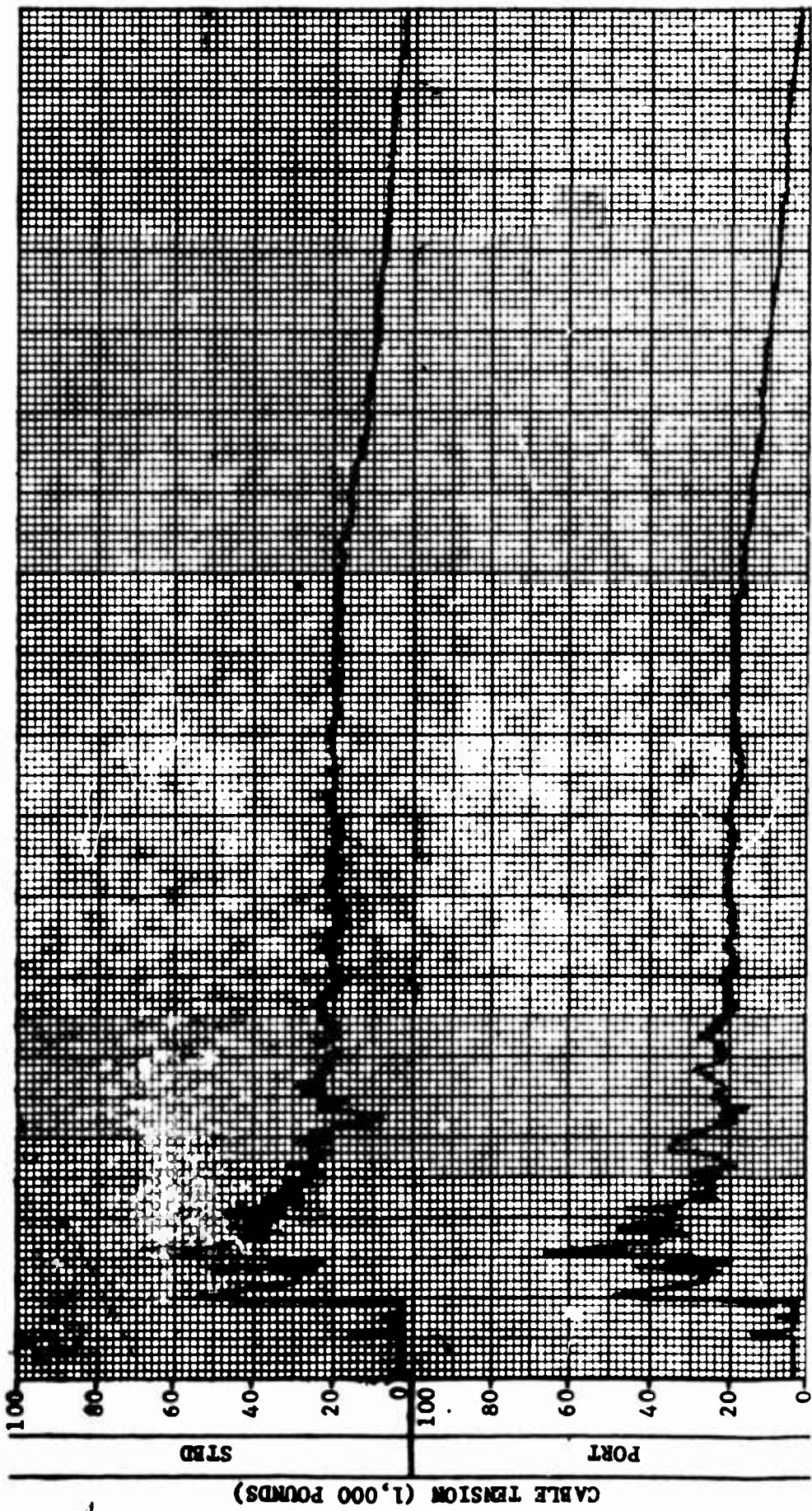
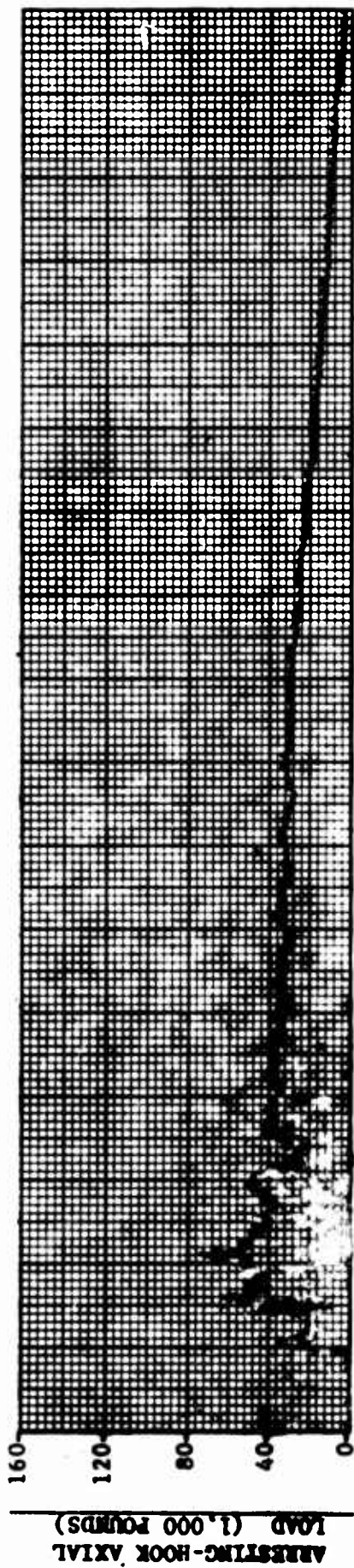


Figure A6 - Continued

B



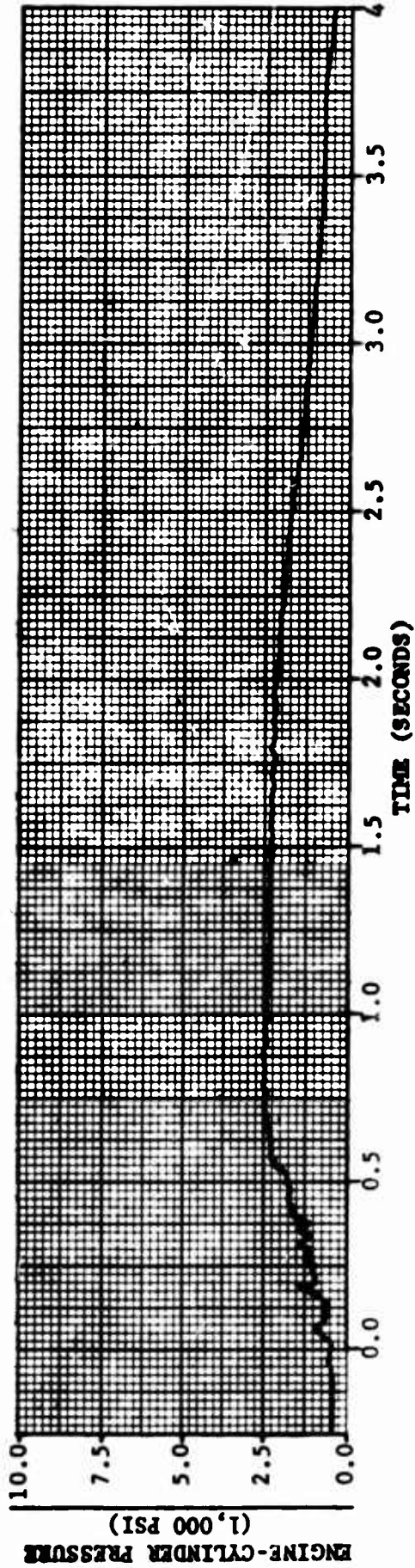
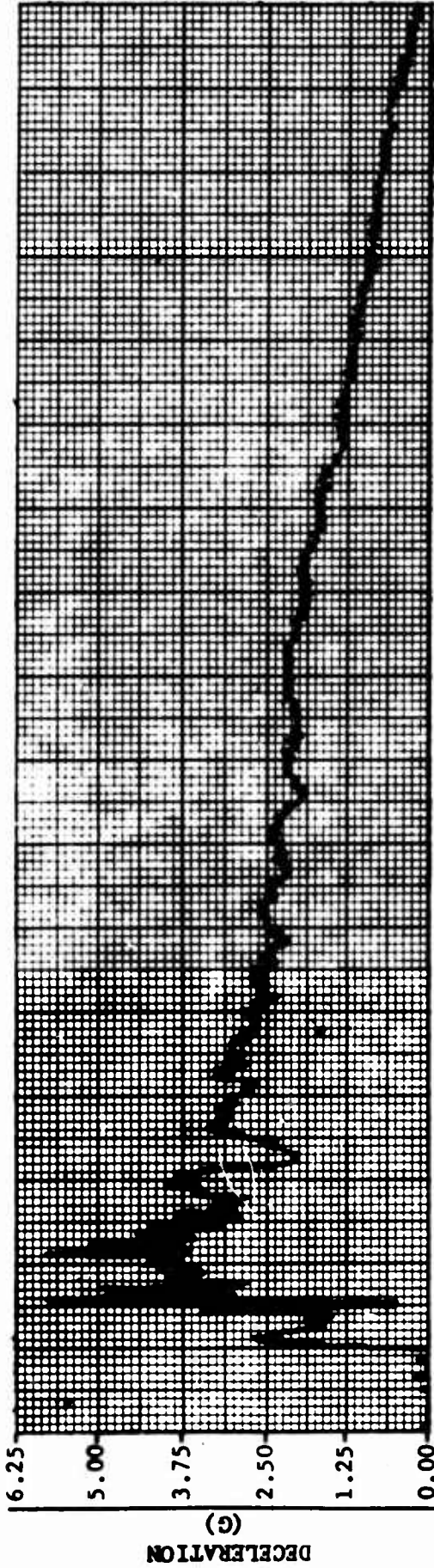
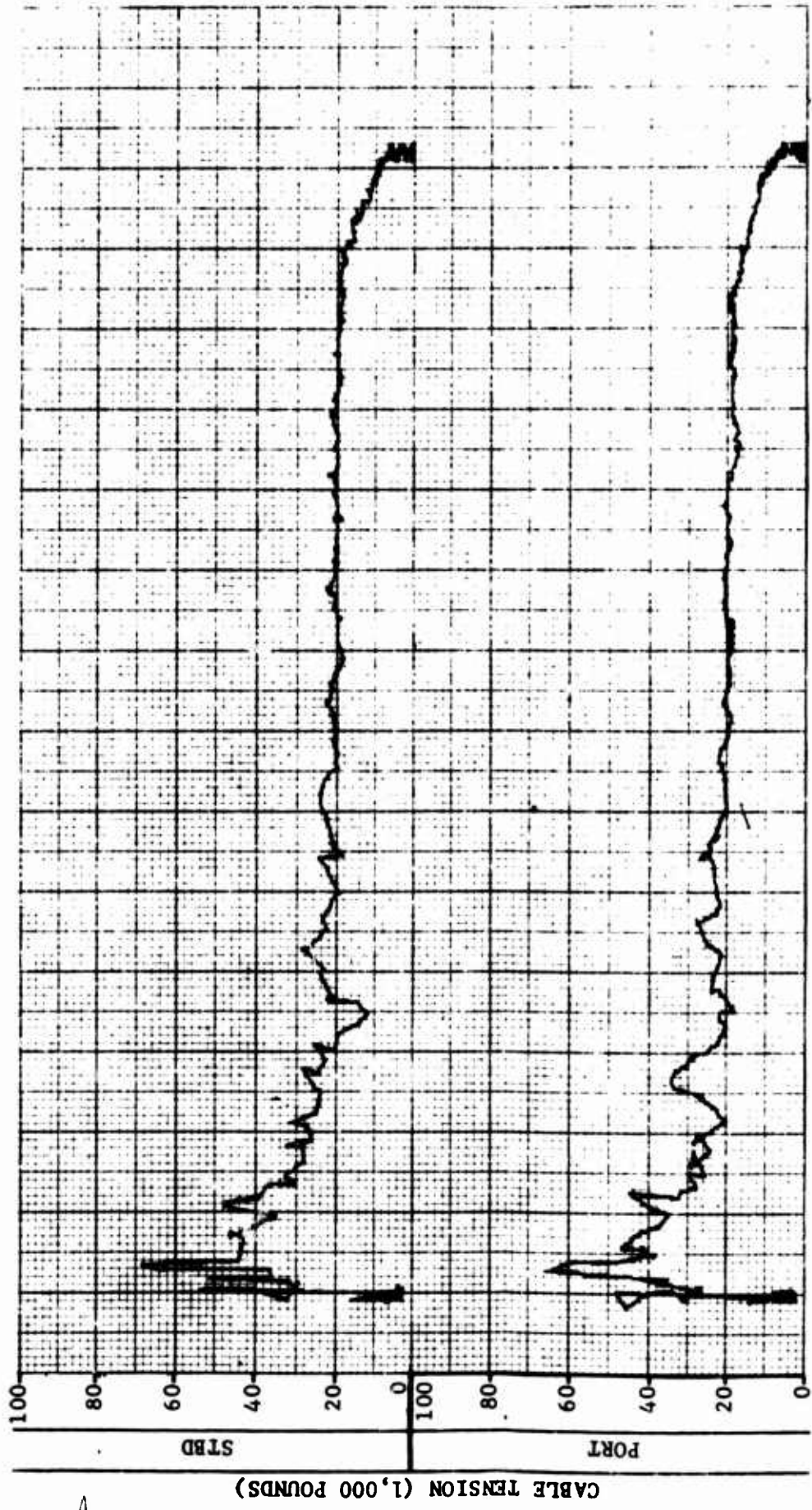
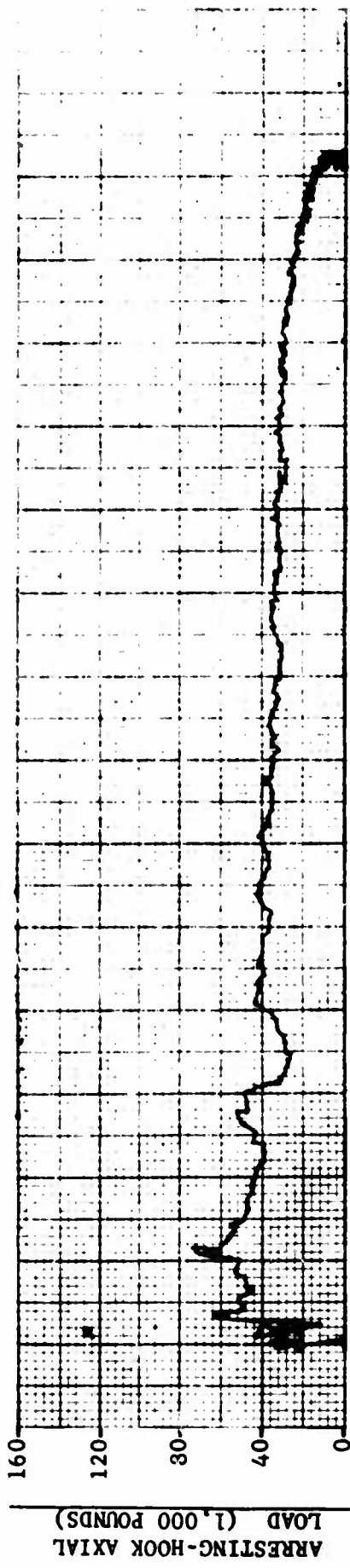


Figure A7 - Time History of Event 21962: ON-CENTER Arrestment of a 12,300-Pound
A-4B Aircraft at an Engaging Speed of 139 Knots (Mark 7 Mod 3
Arresting Gear Configured With Sheave Dampers)



A

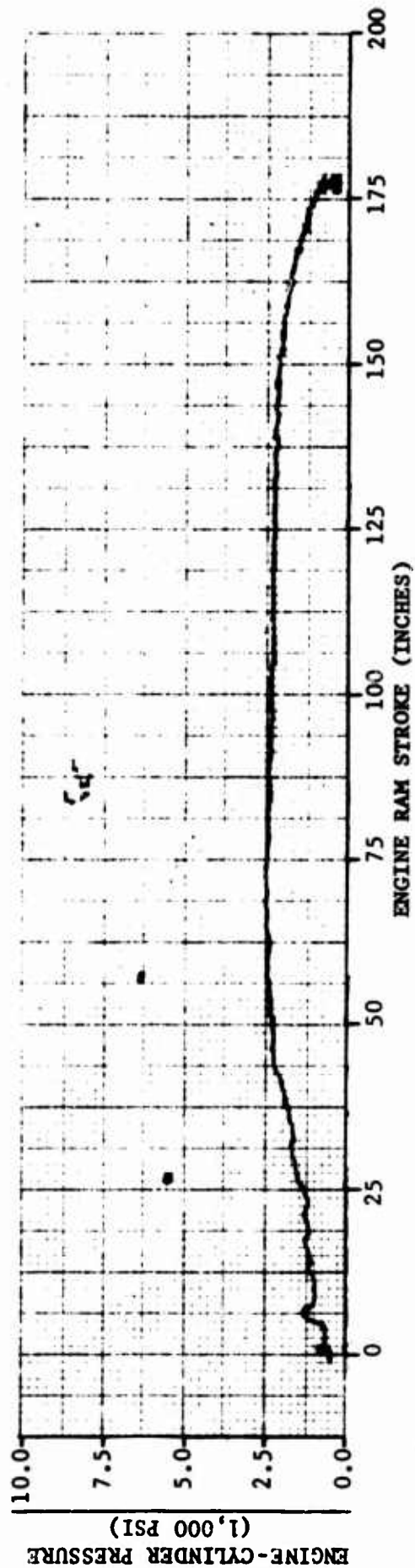
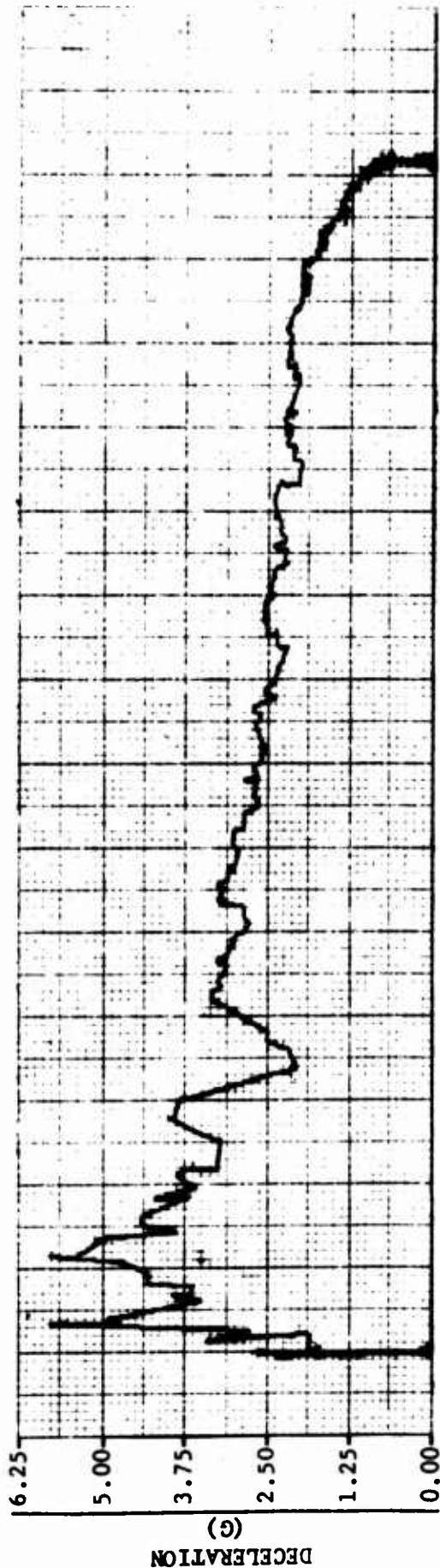
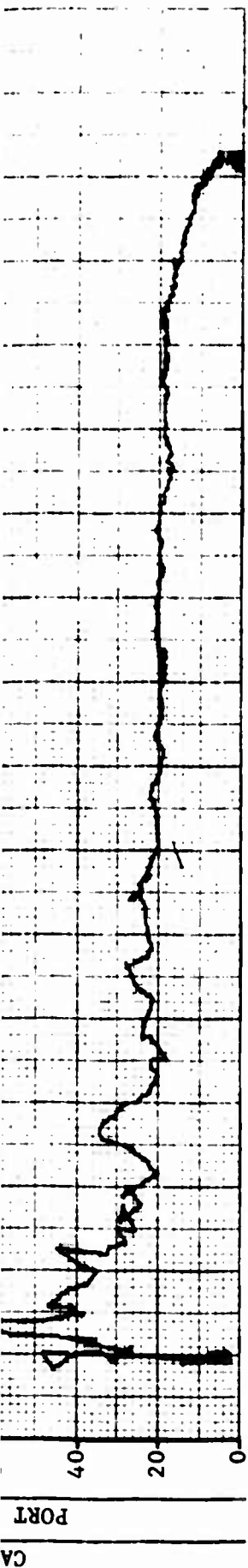
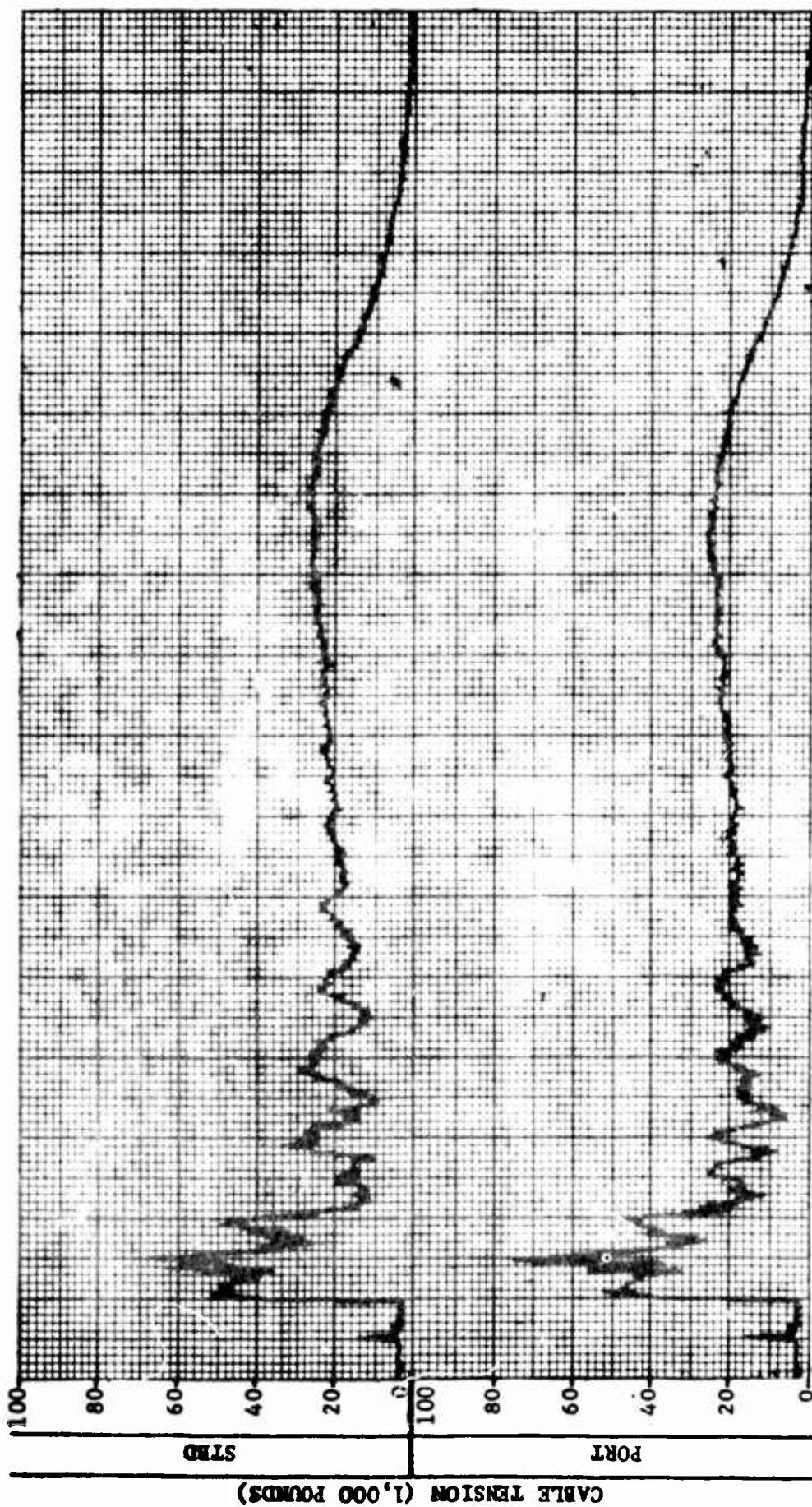
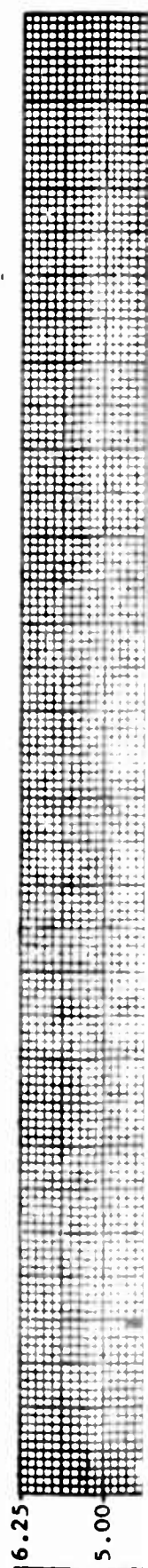


Figure A7 - Continued



H



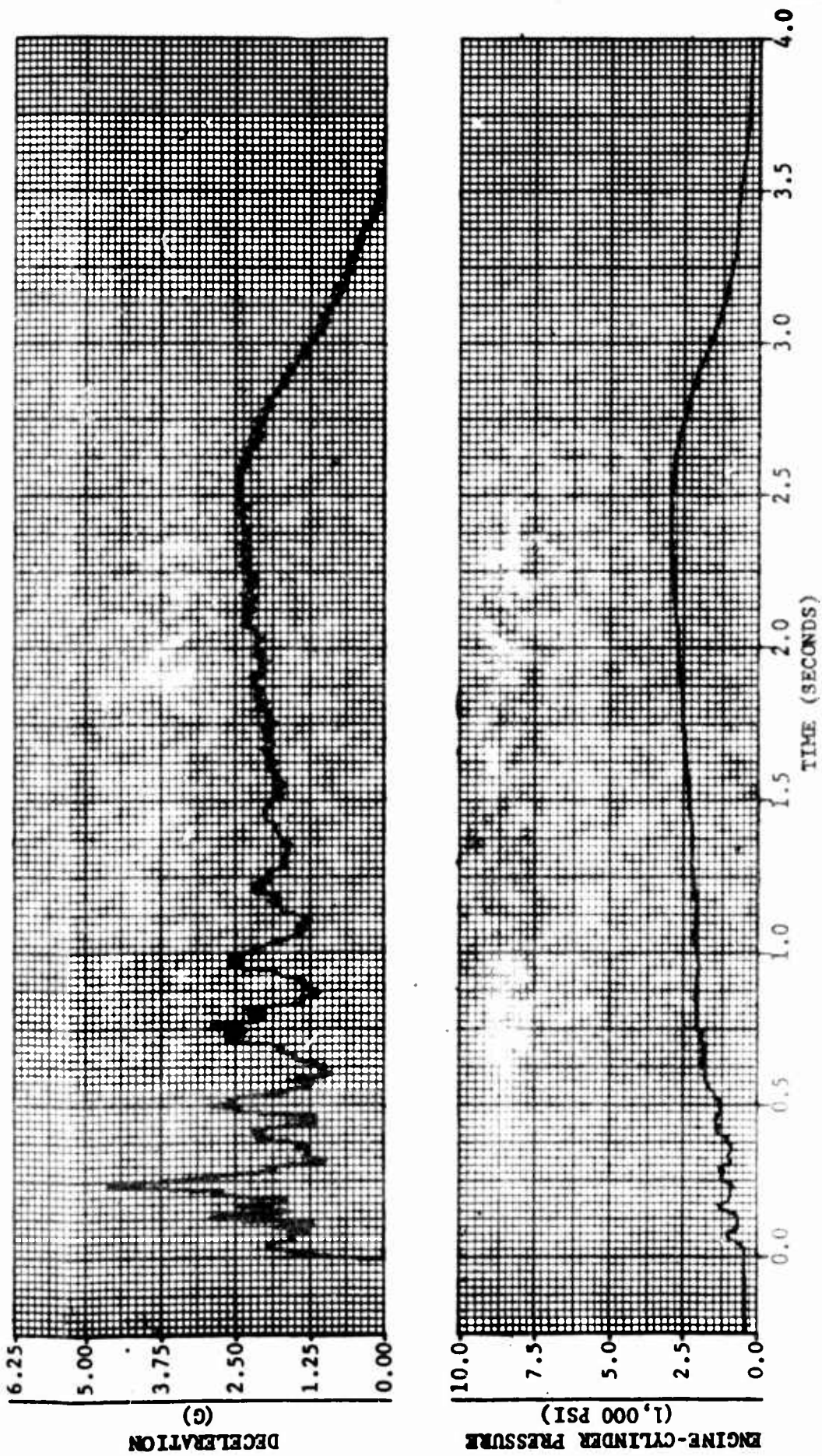
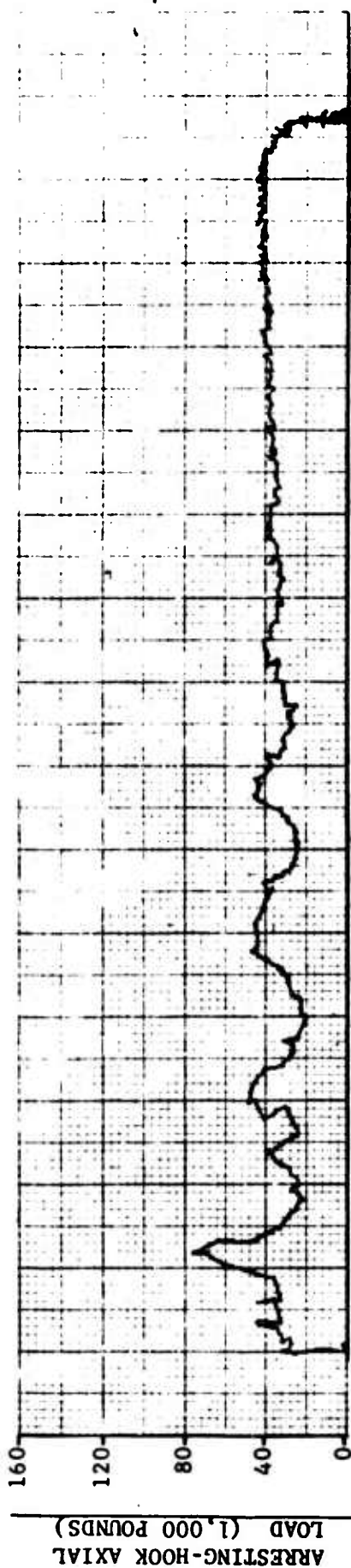
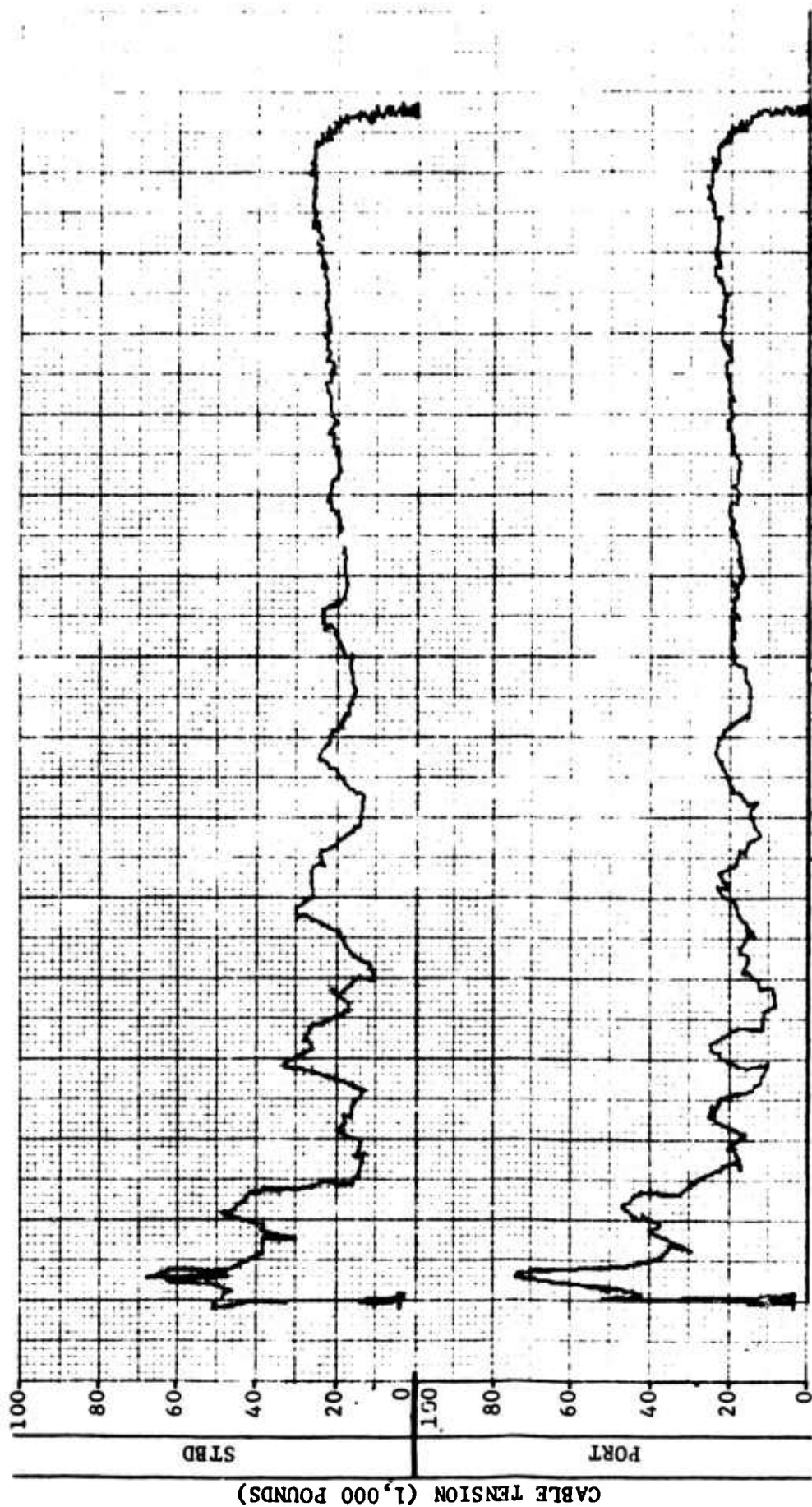


Figure 2 - The History of Event 22137: ON-CENTER Arrestment of a 14,400-Pound Aircraft at an Engaging Speed of 124 Knots (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers)



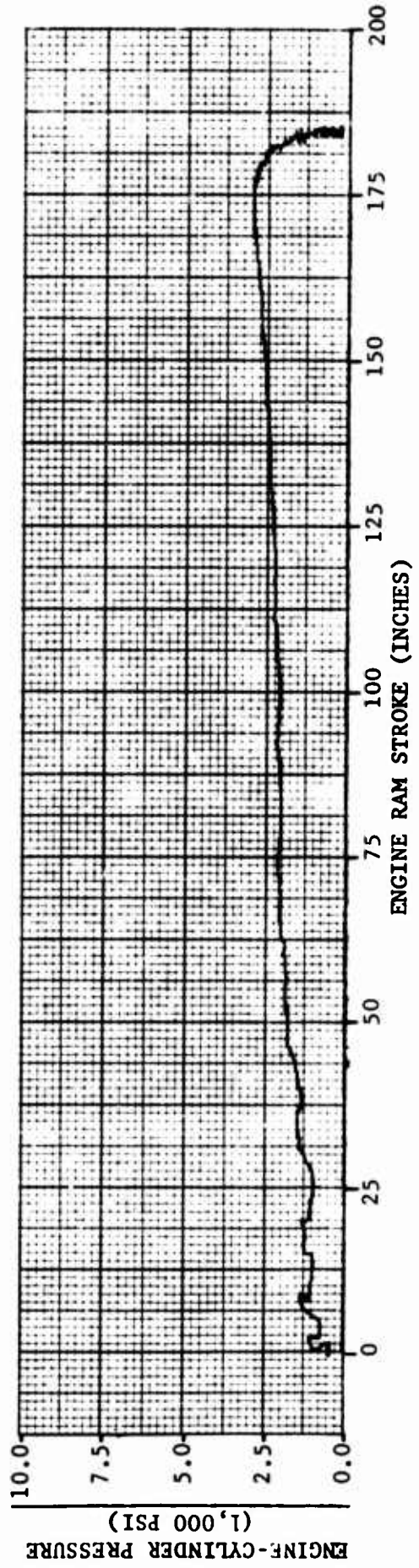
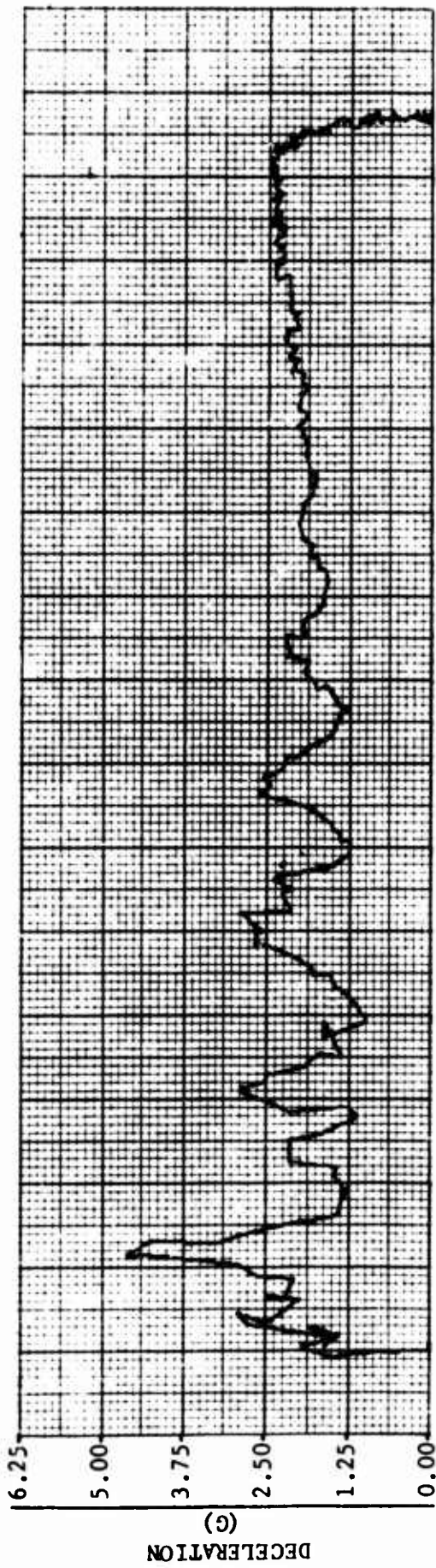
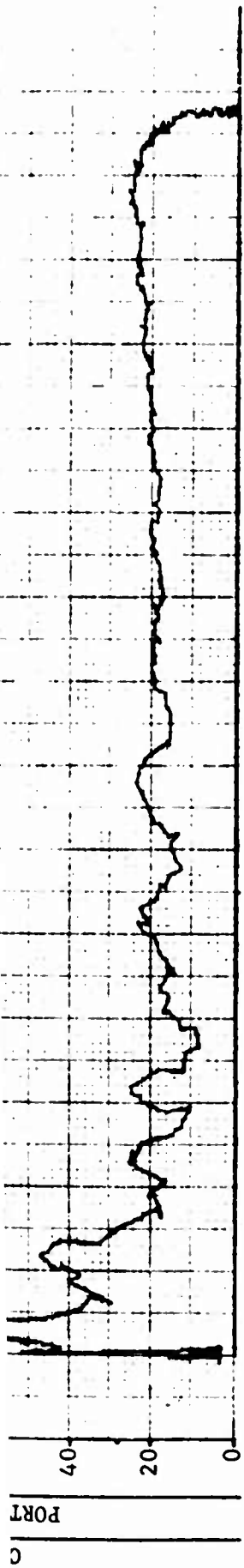
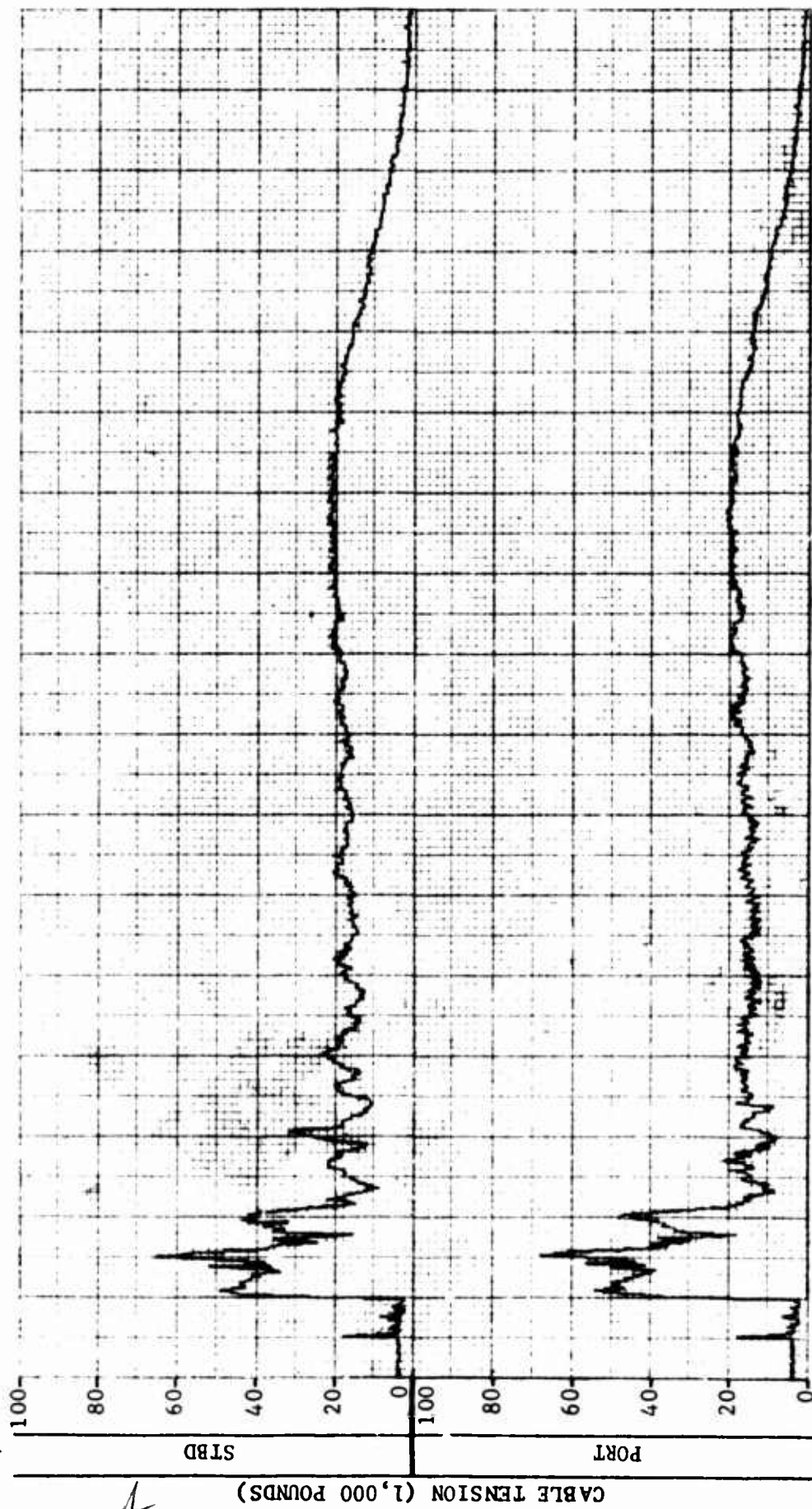
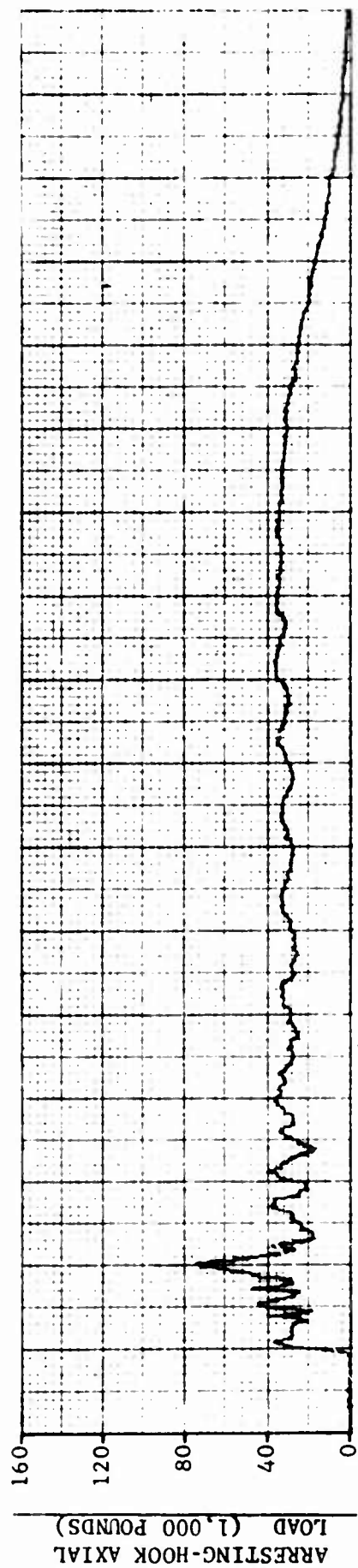
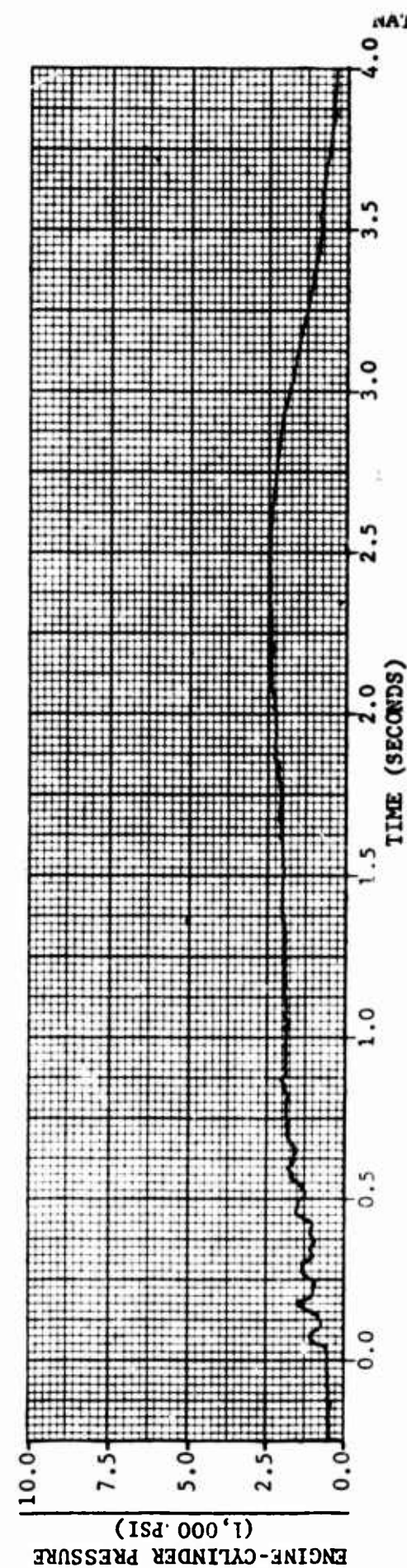
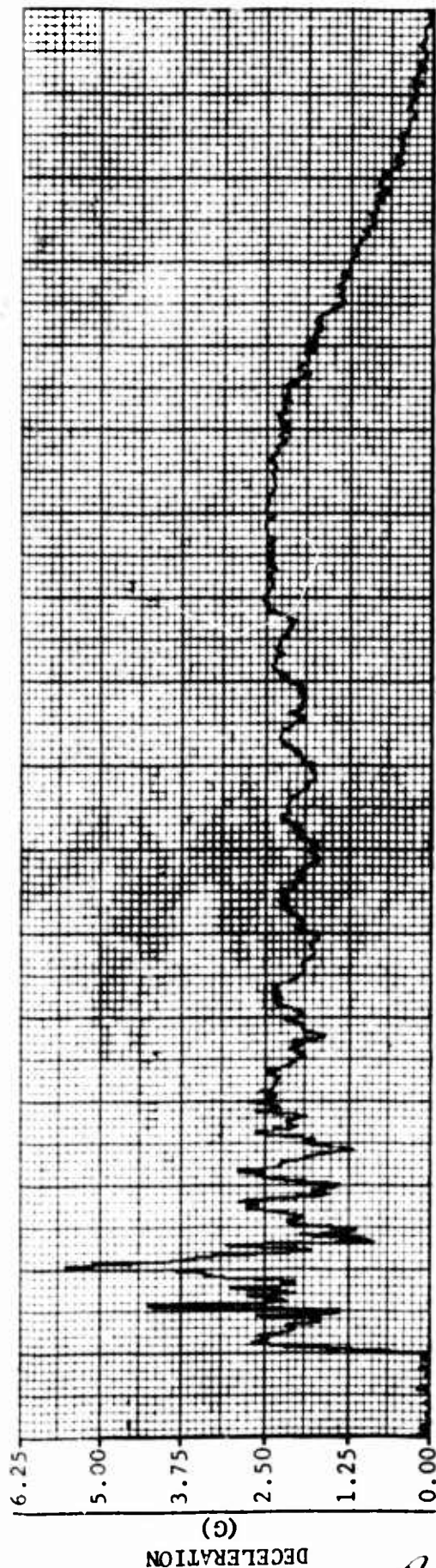
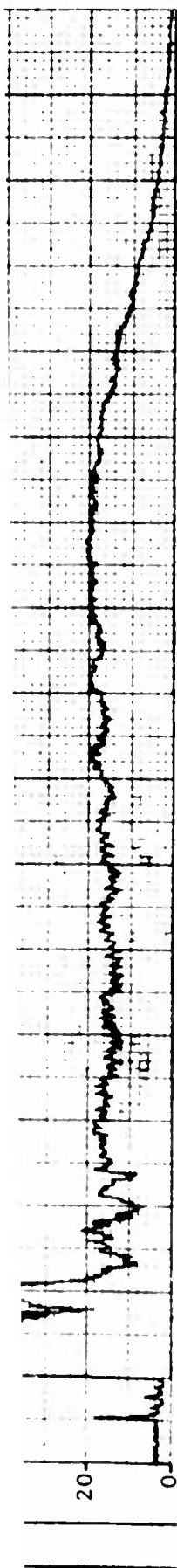


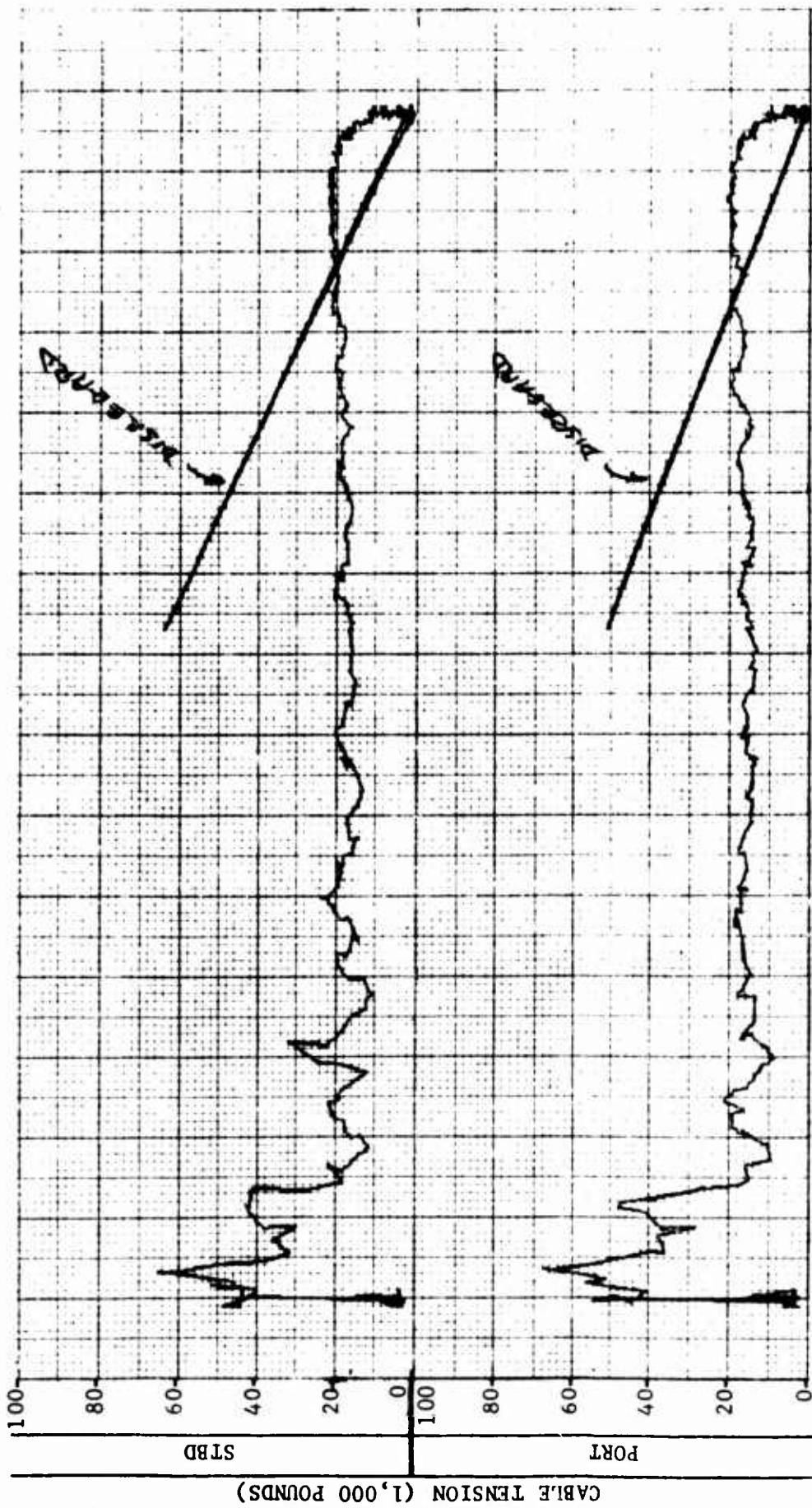
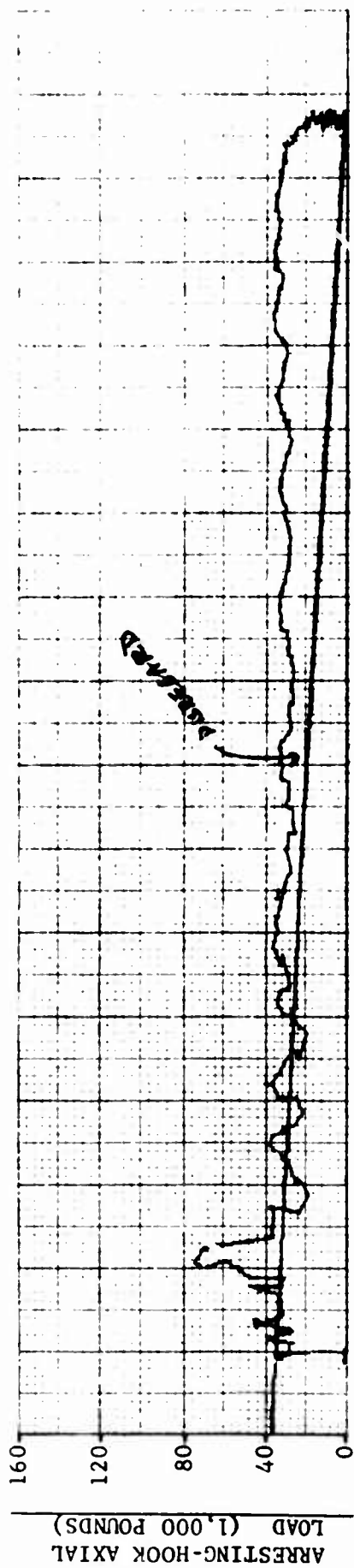
Figure A8 - Continued





DATA-EN-1100

Figure A9 - Time History of Event 22191: ON-CENTER Arrestment of a 12,300-Pound A-4B Aircraft at an Engaging Speed of 122 Knots (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers)



A

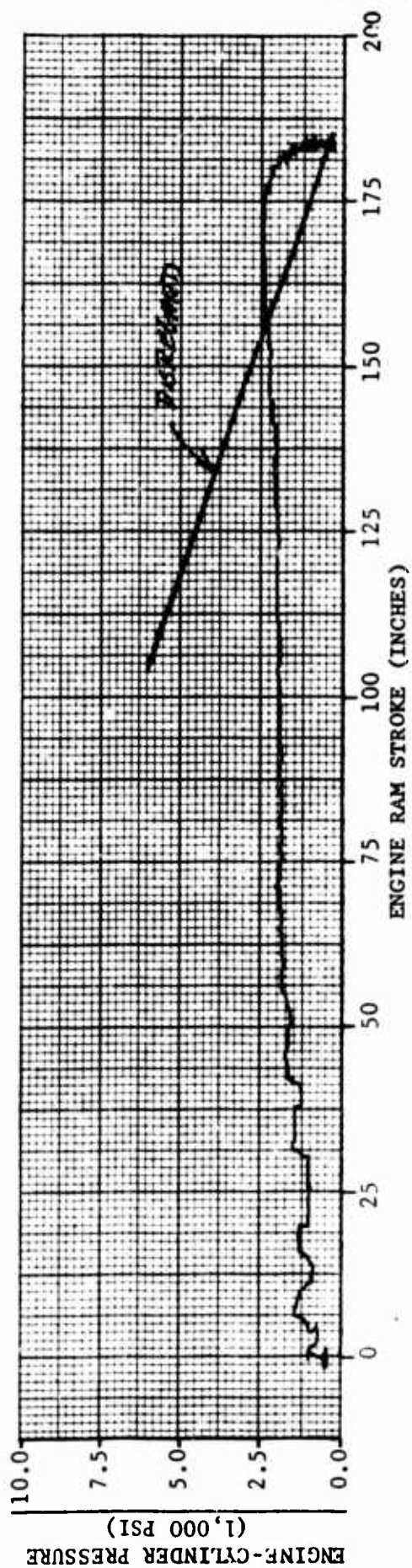
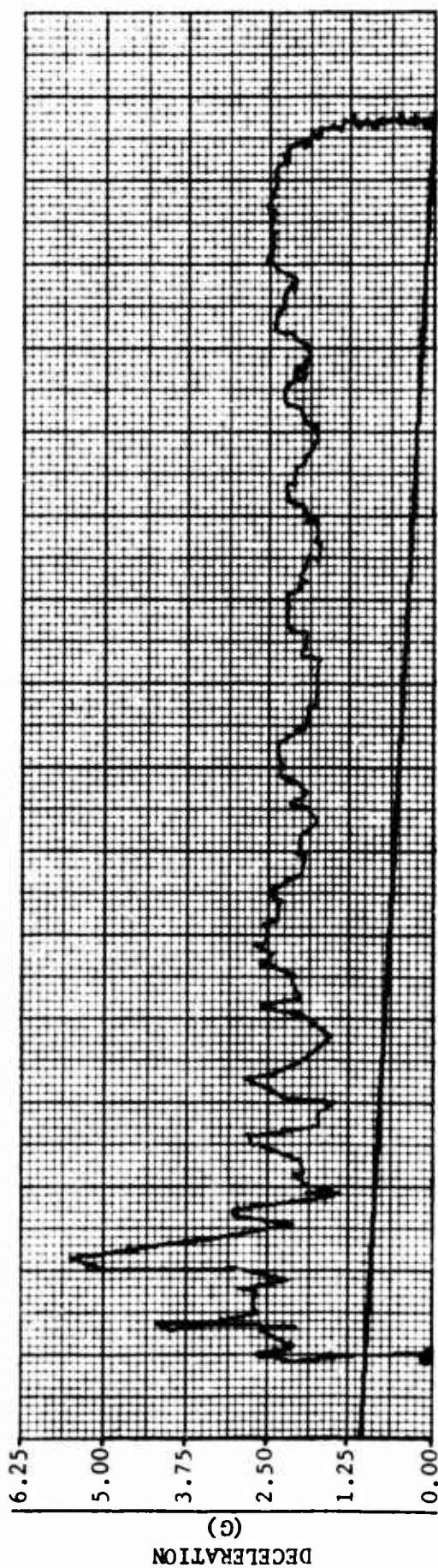
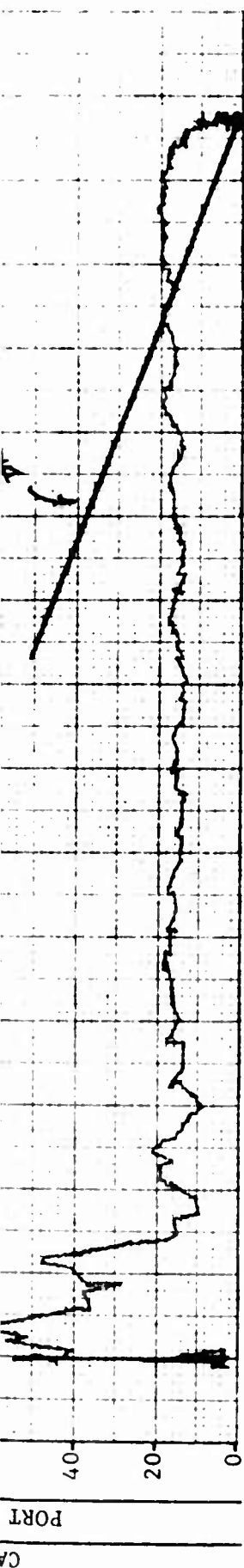
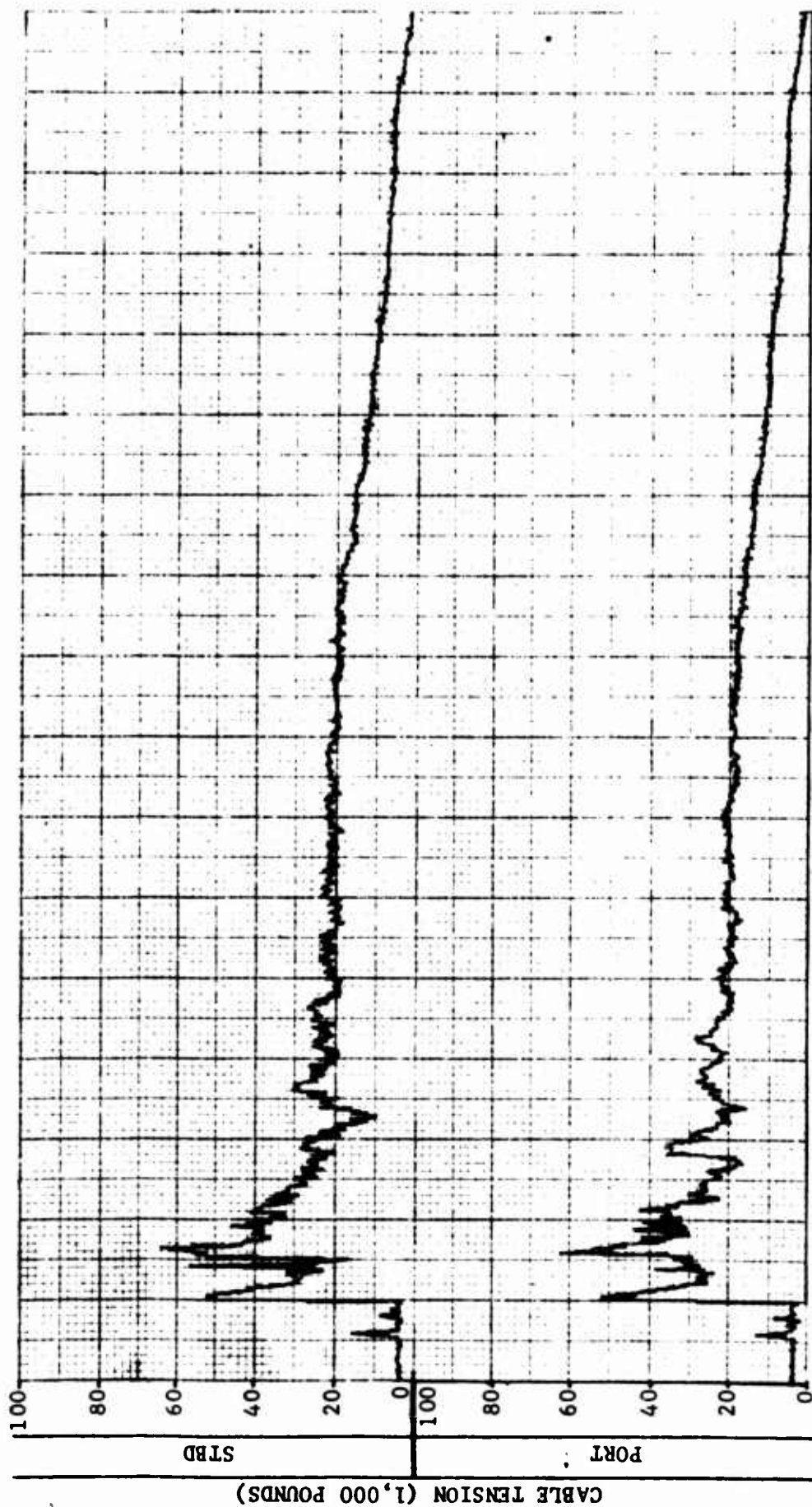


Figure A9 - Continued



#

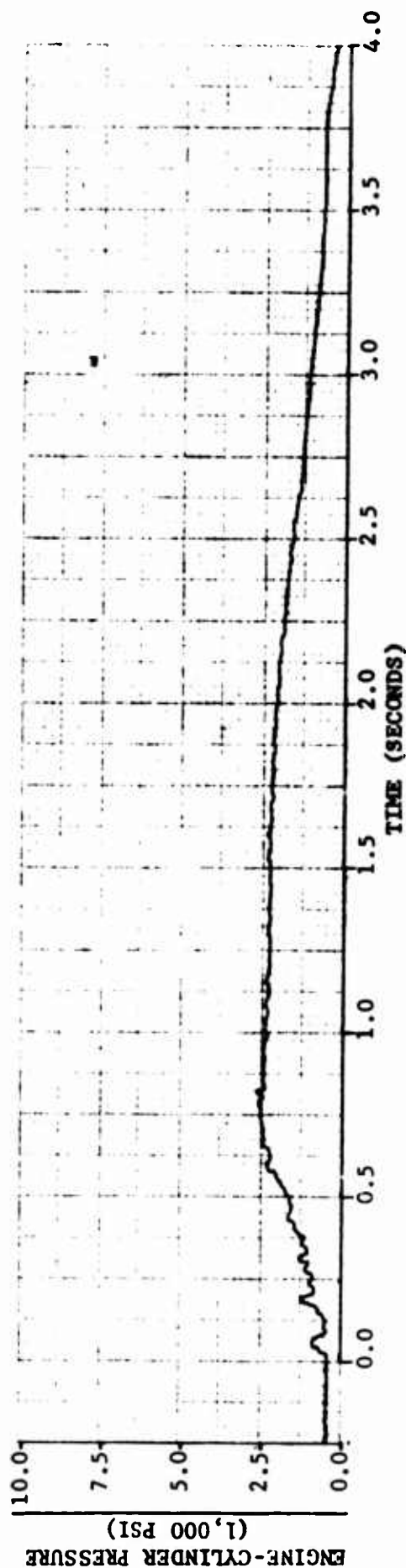
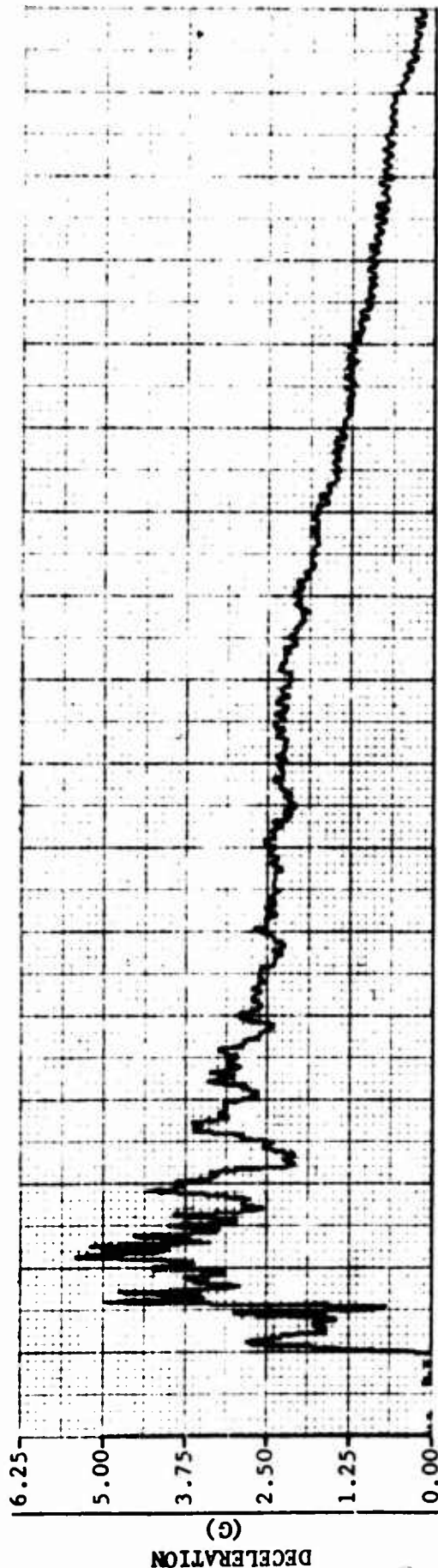
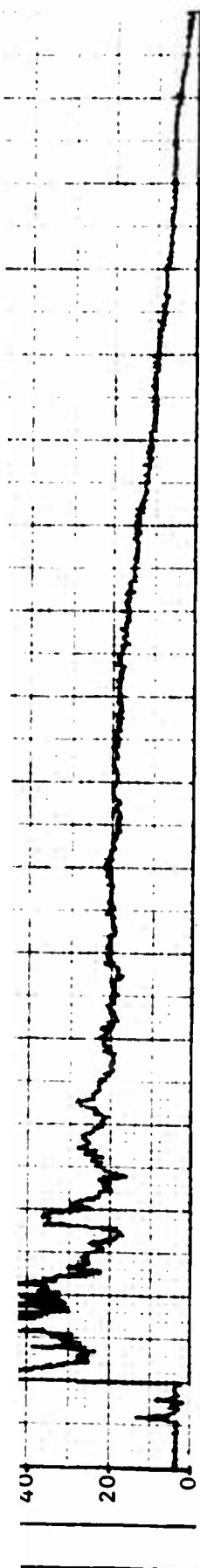
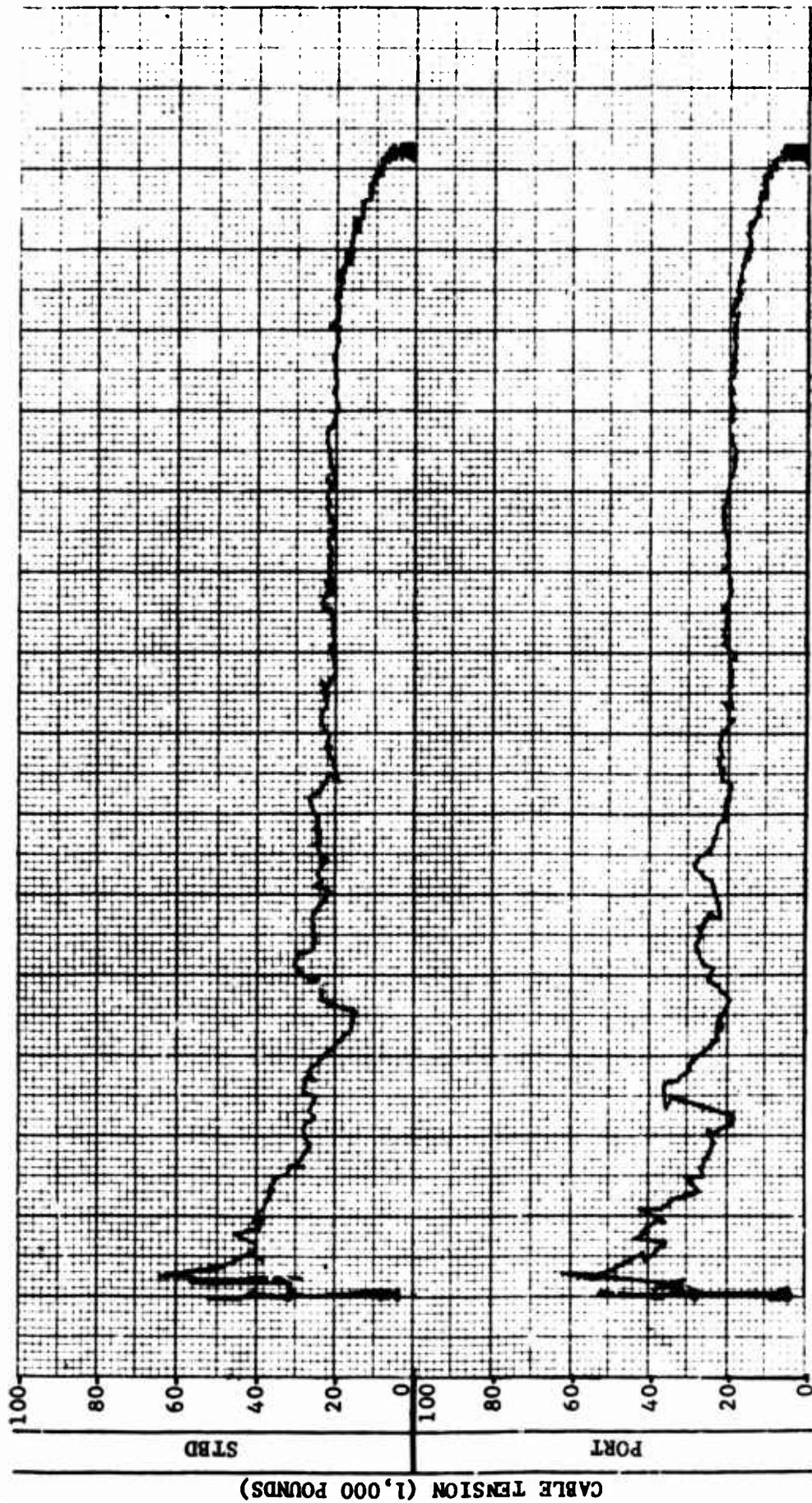
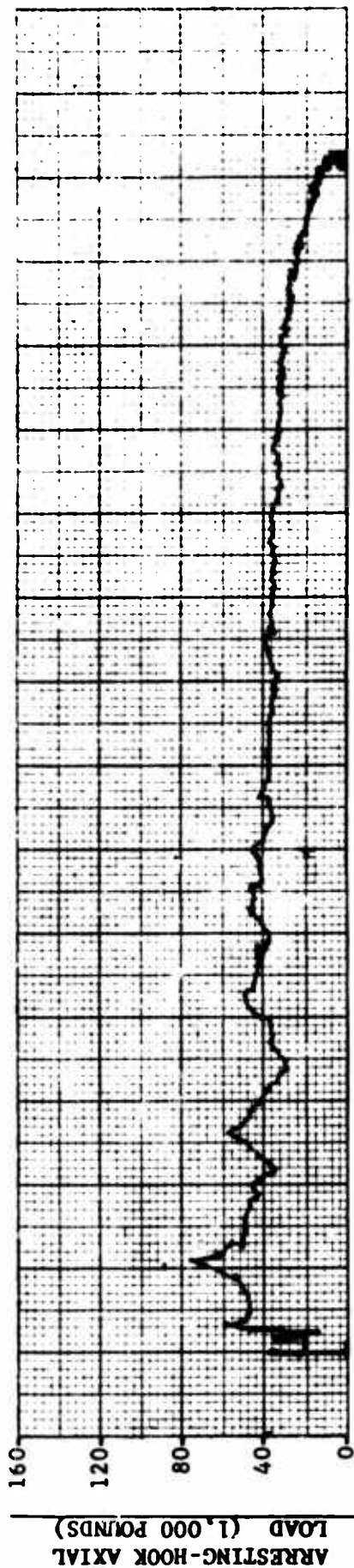


Figure A10 - Time History of Event 21980: ON-CENTER Arrestment of a 12,000-Pound A-4B Aircraft at an Engaging Speed of 138 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using a Single Weight Setting)



H

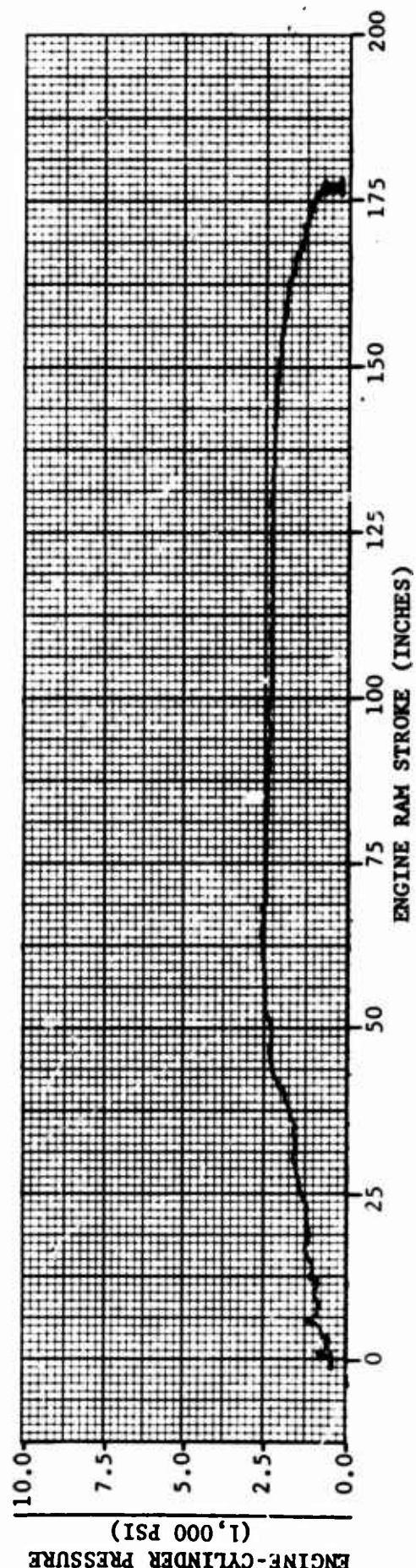
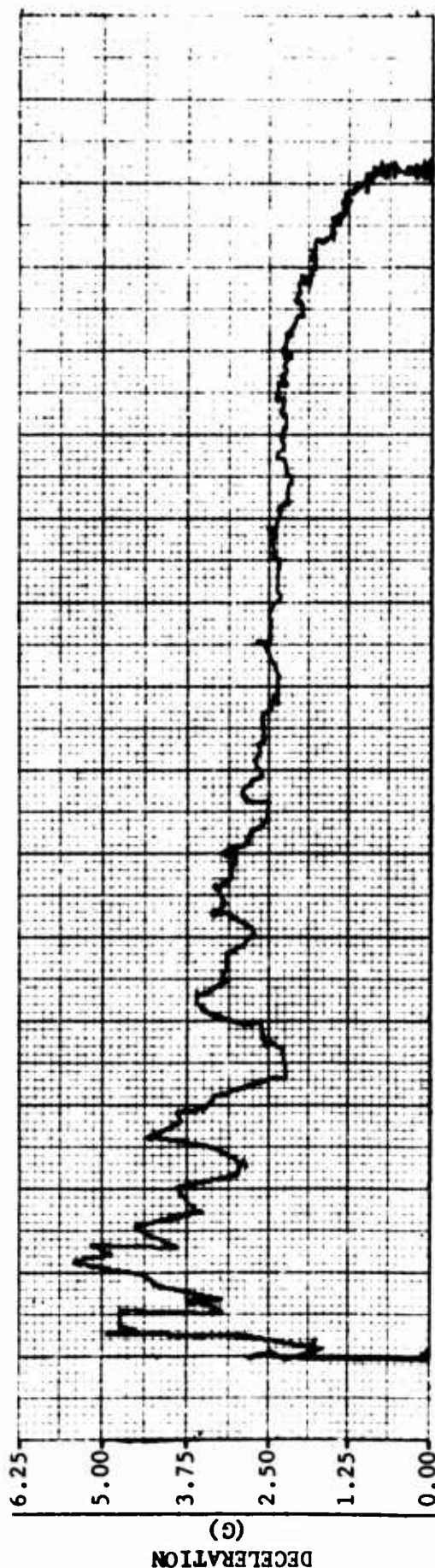
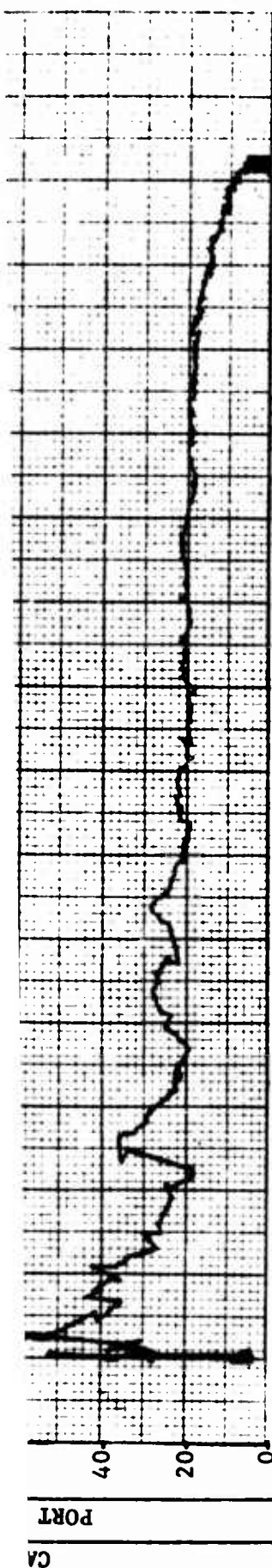
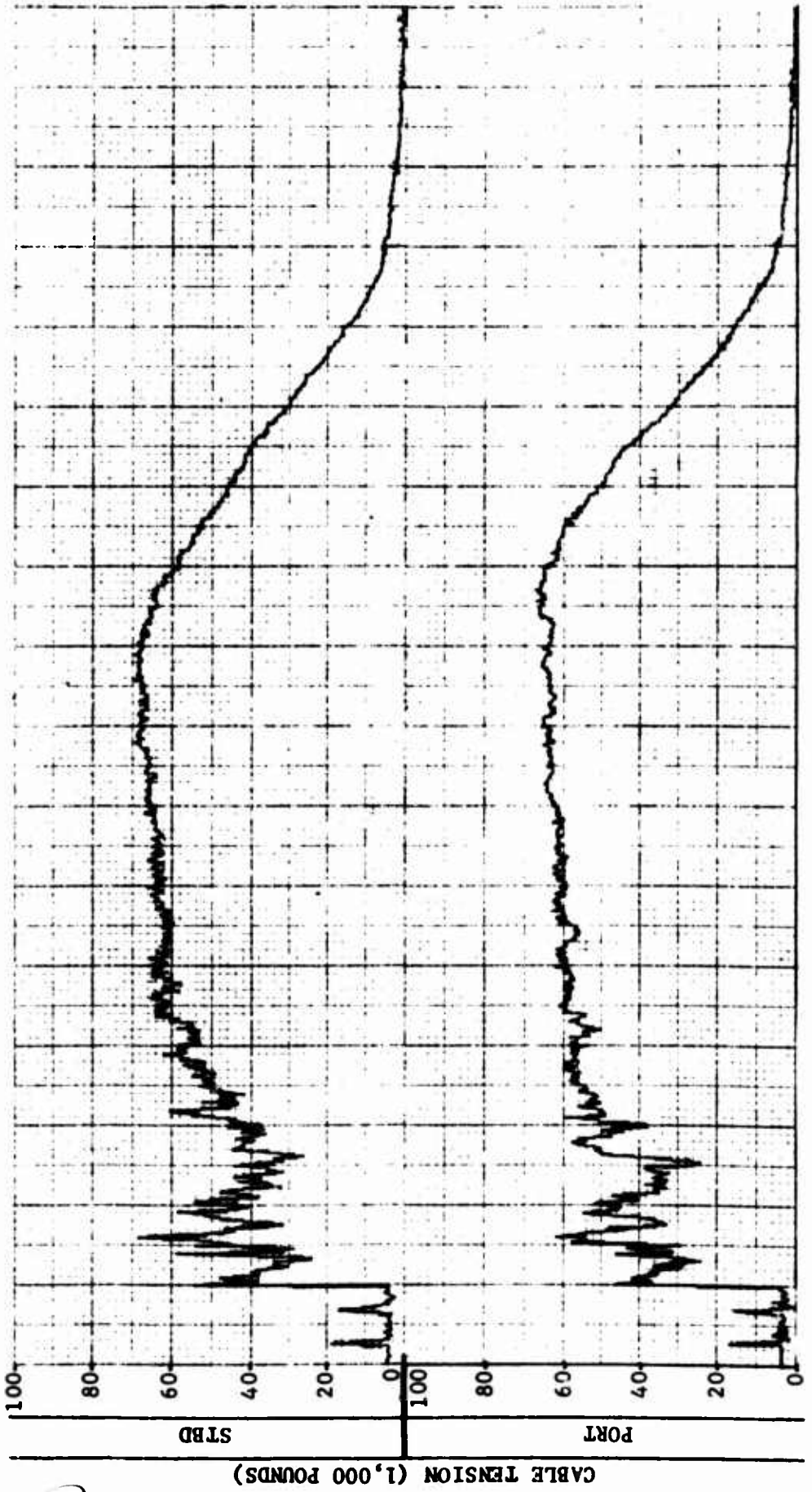
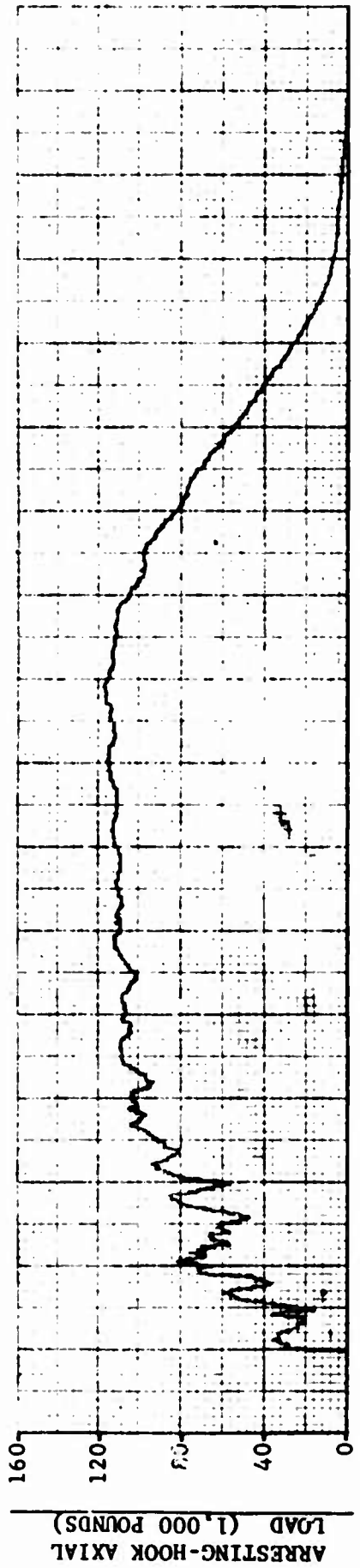
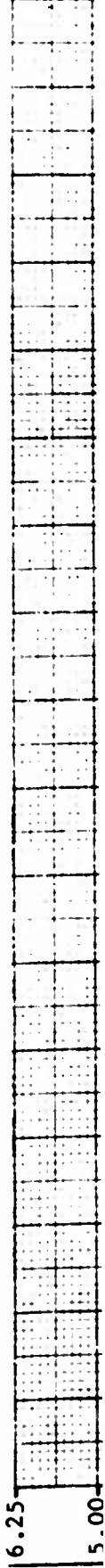


Figure A10 - Continued



DI



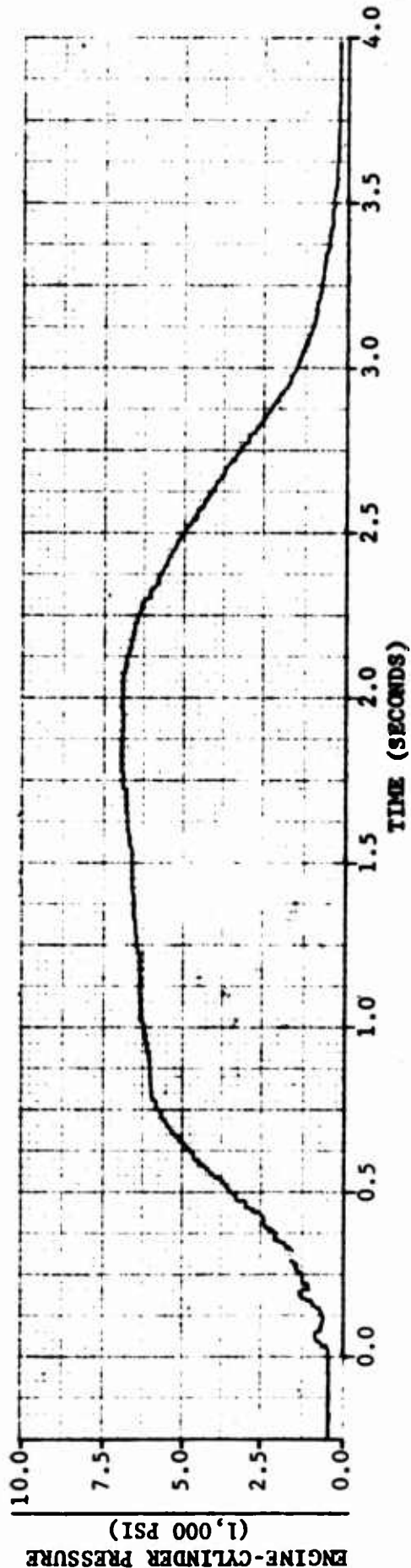
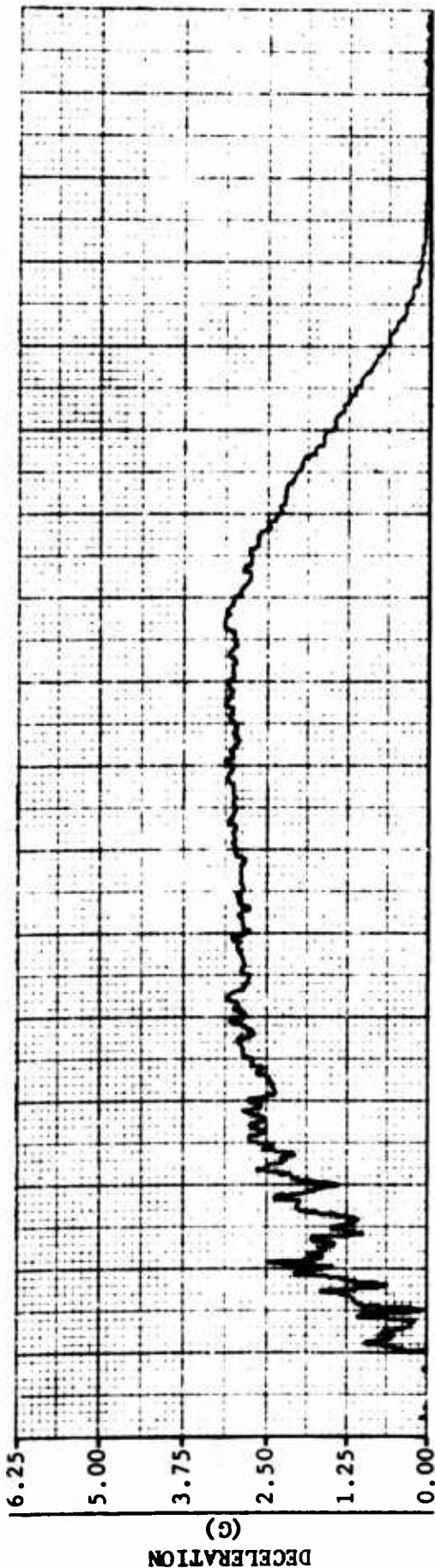
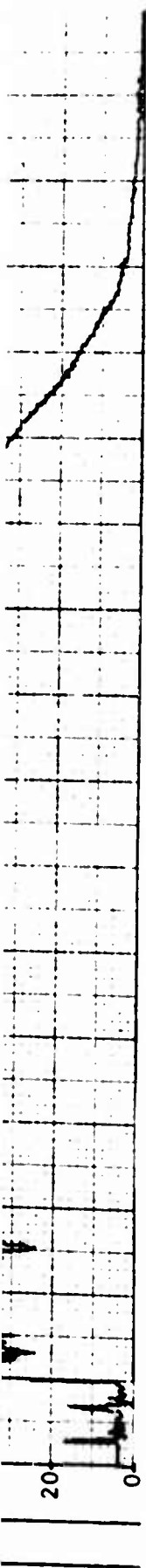
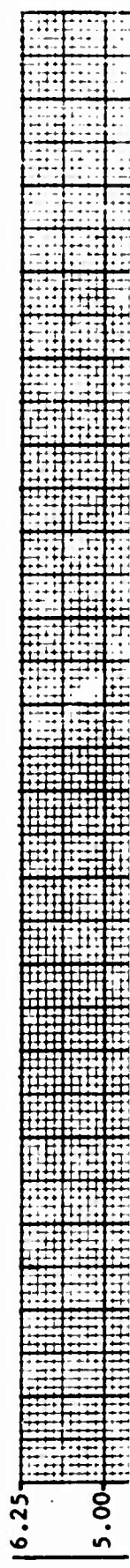
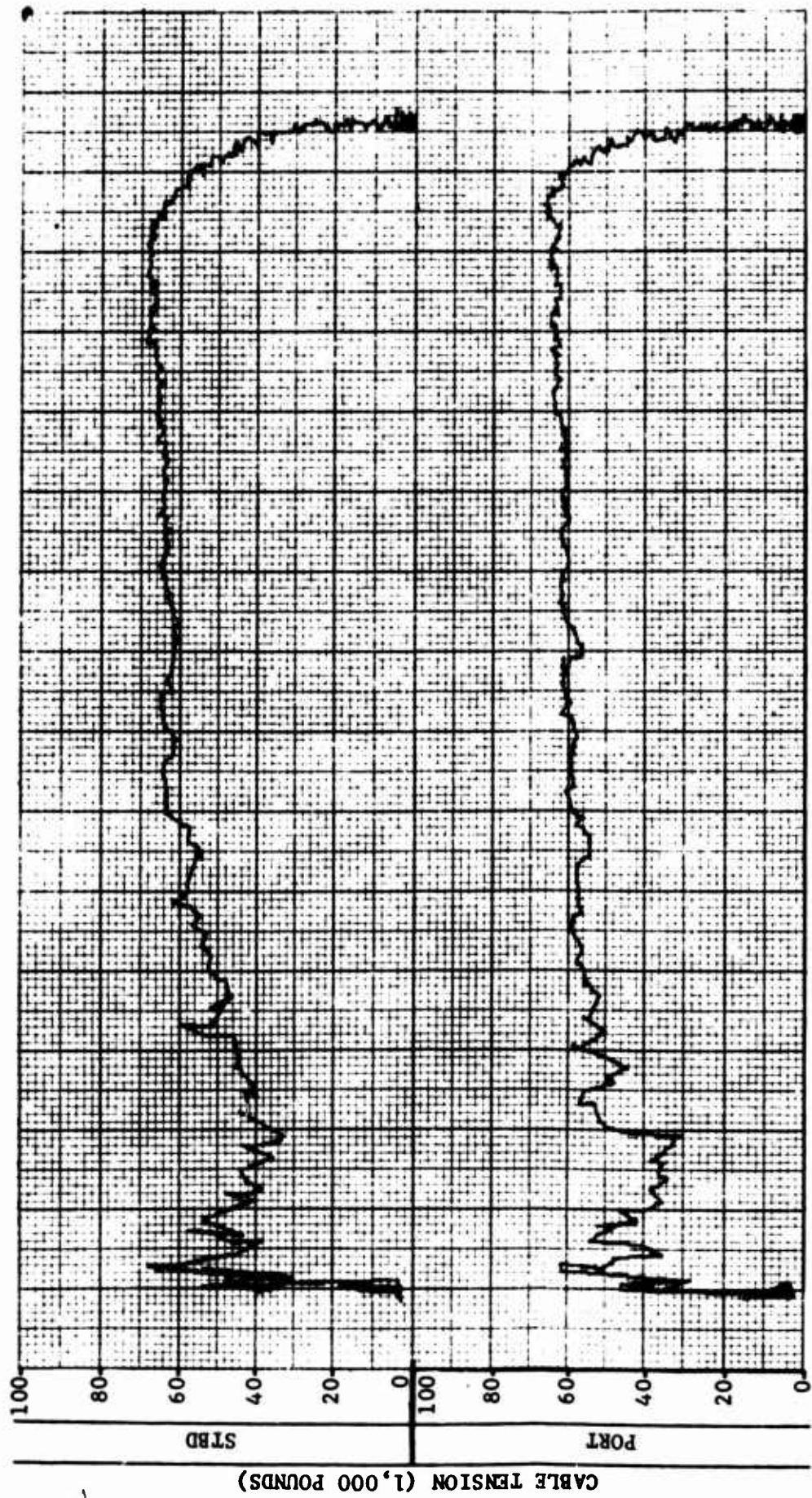
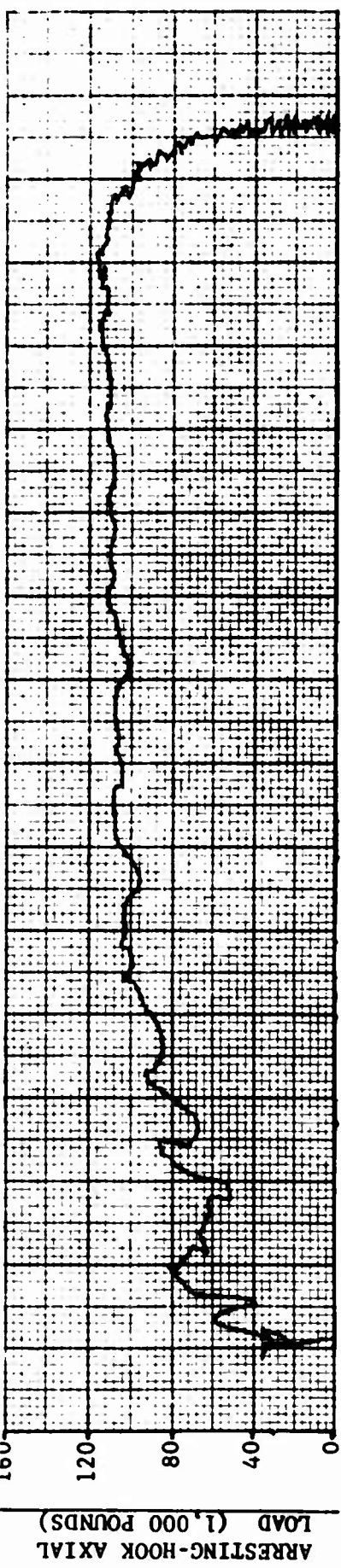


Figure A11 - Time History of Event 21873: ON-CENTER Arrestment of a 32,500-Pound F-4A Aircraft at an Engaging Speed of 134 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers)



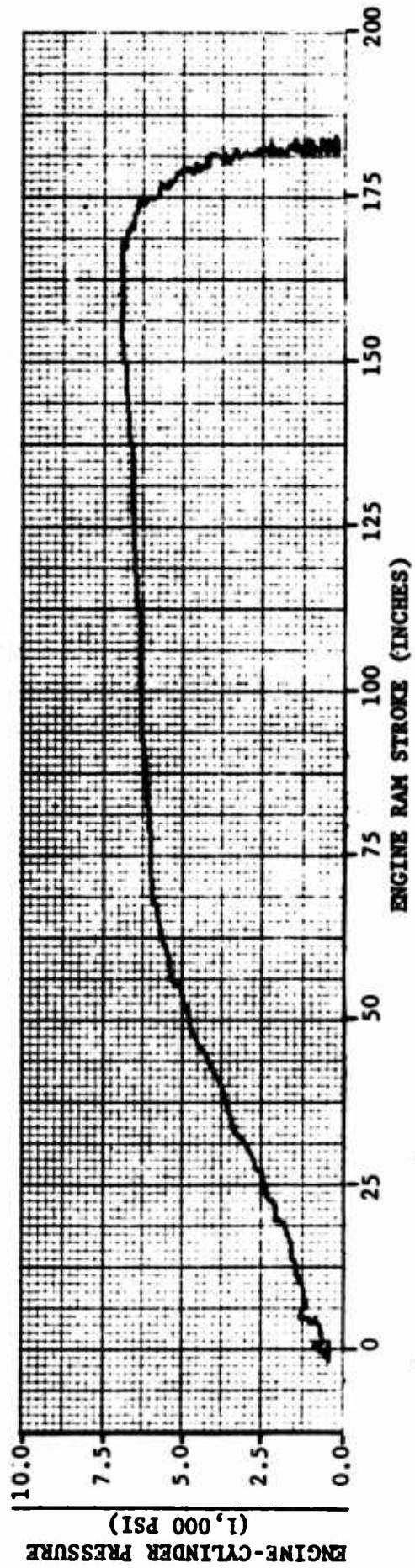
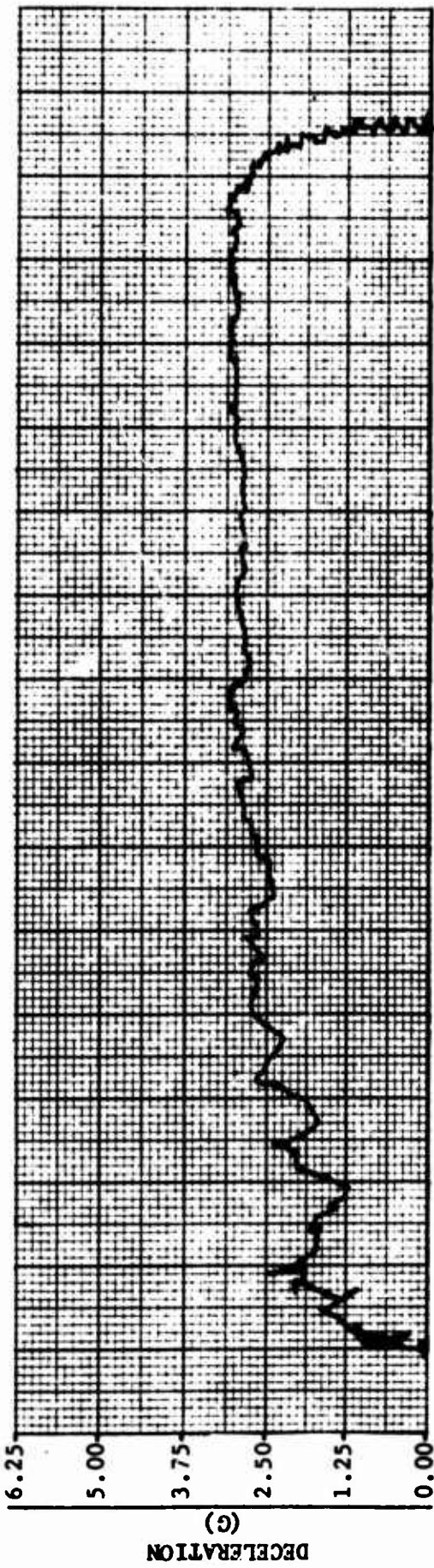
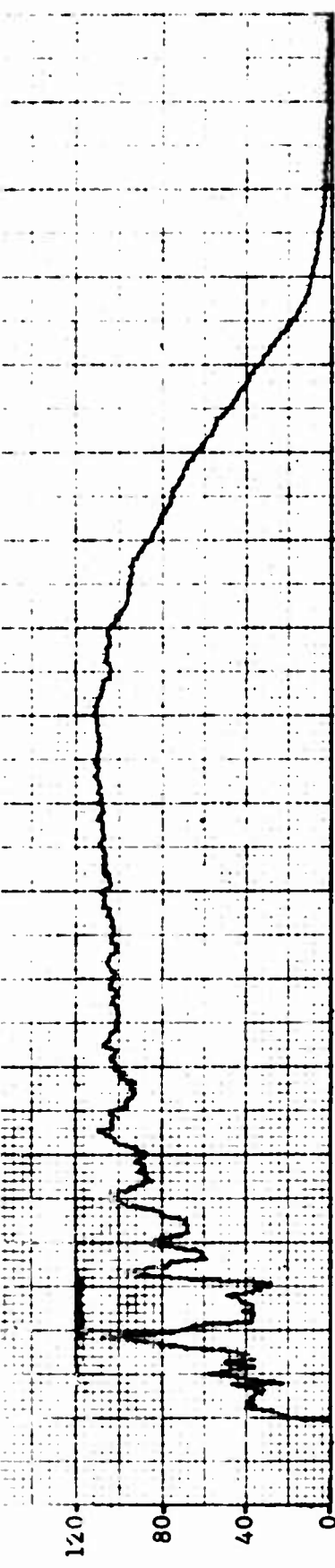
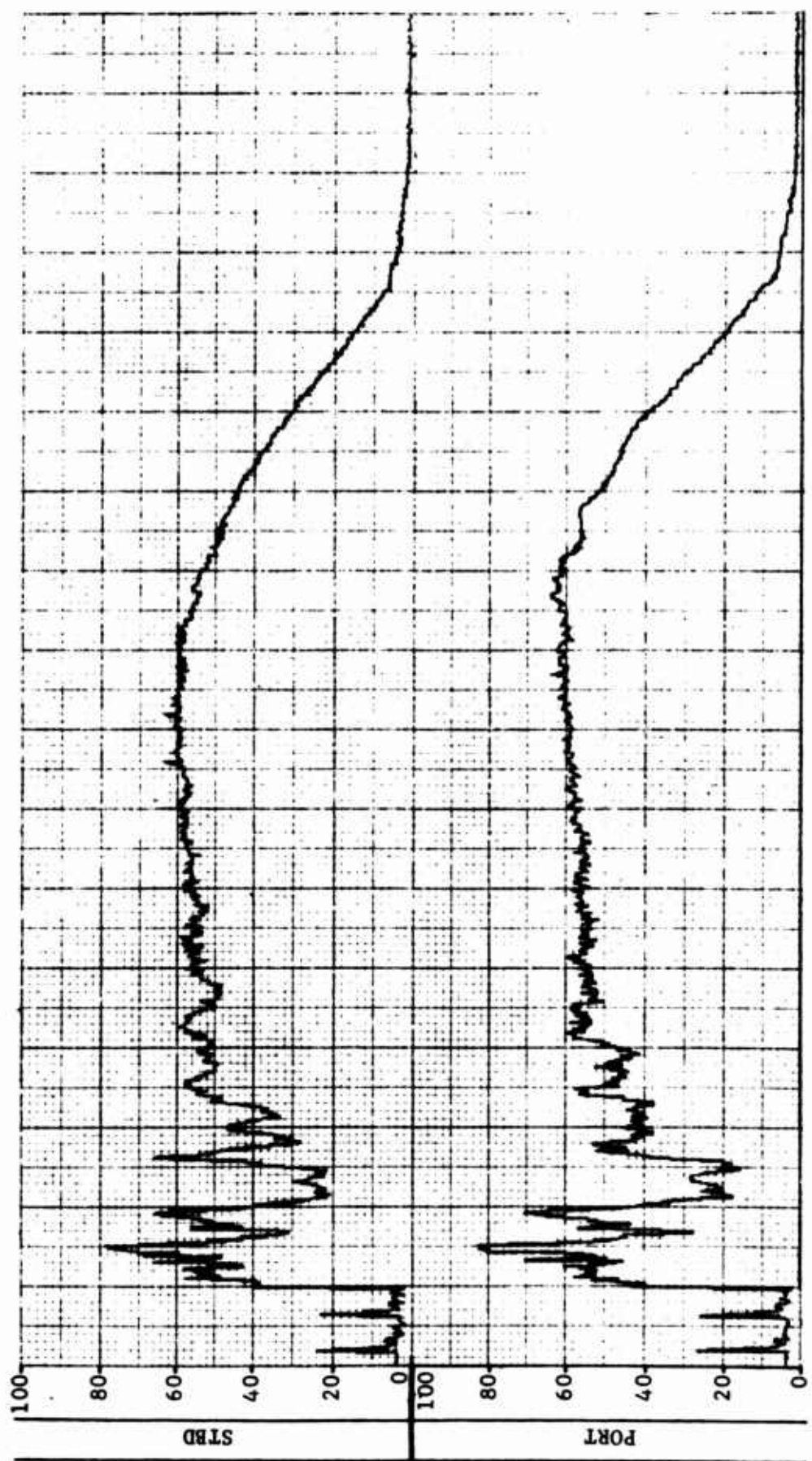


Figure All - Continued

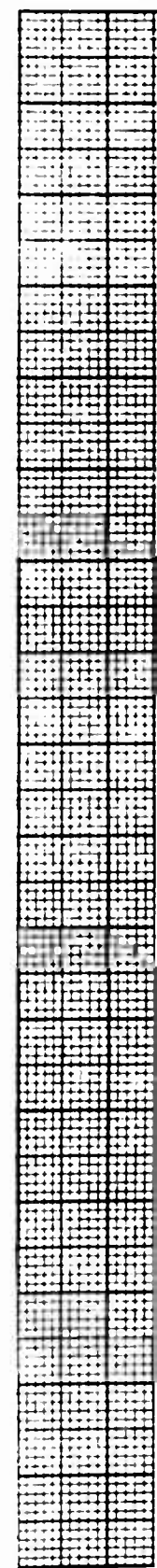
ARRESTING-HOOK AXIAL
LOAD (1,000 POUNDS)



CABLE TENSION (1,000 POUNDS)



6.25
5.00



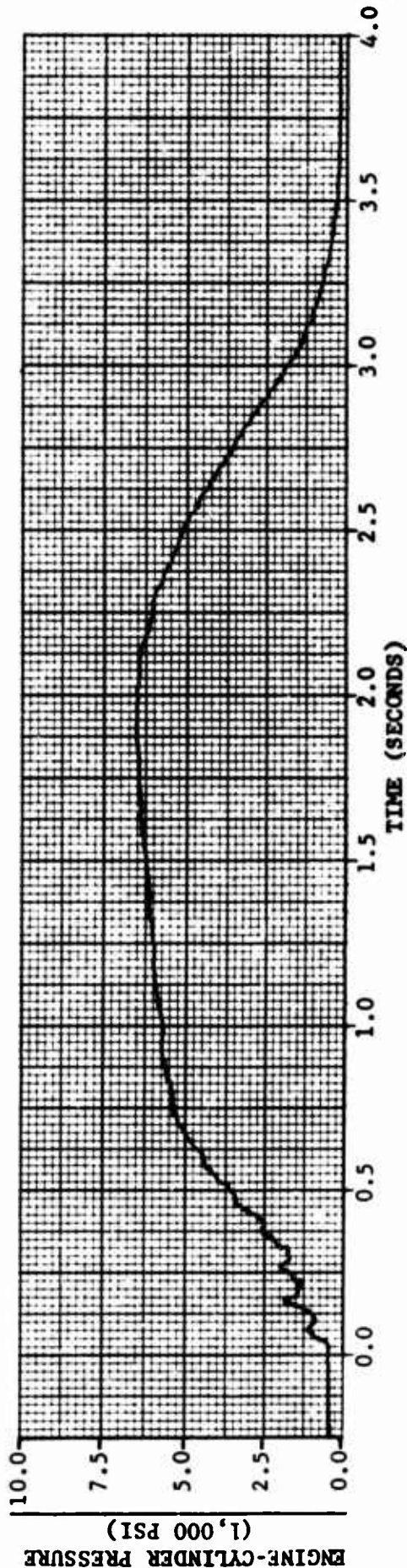
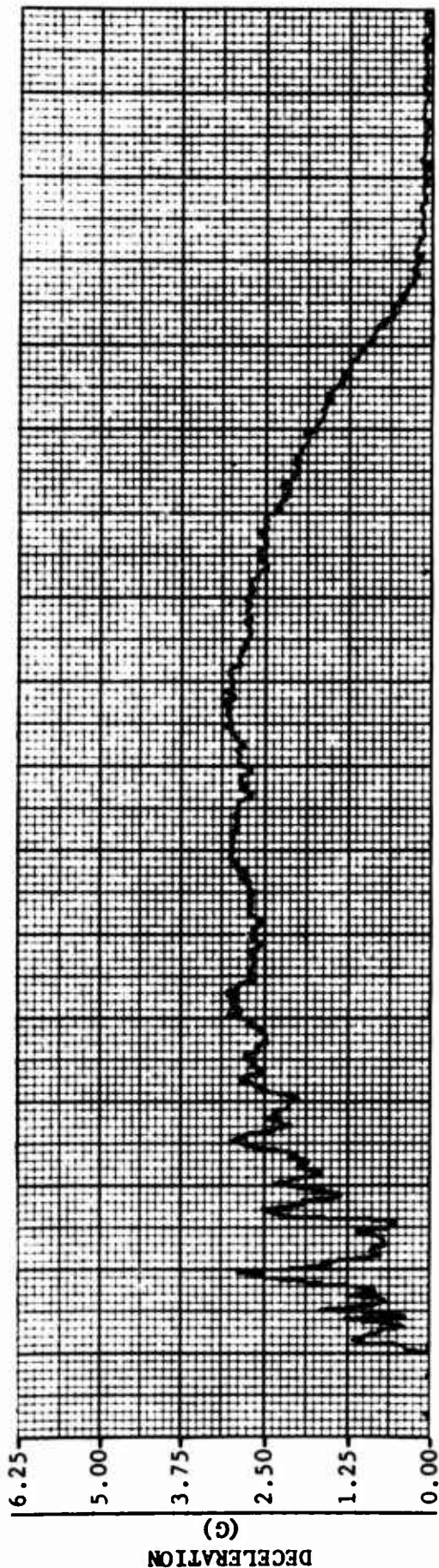
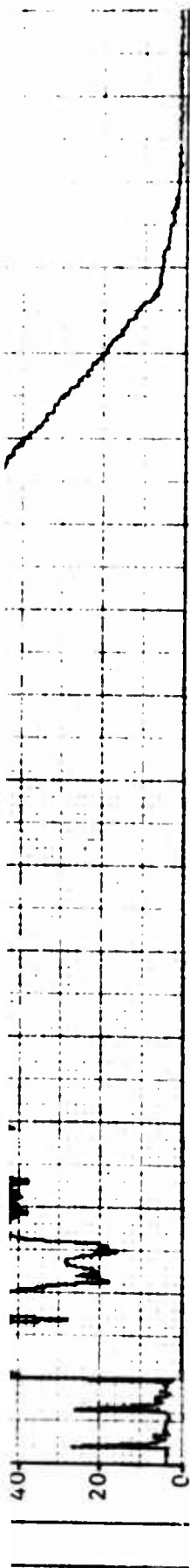
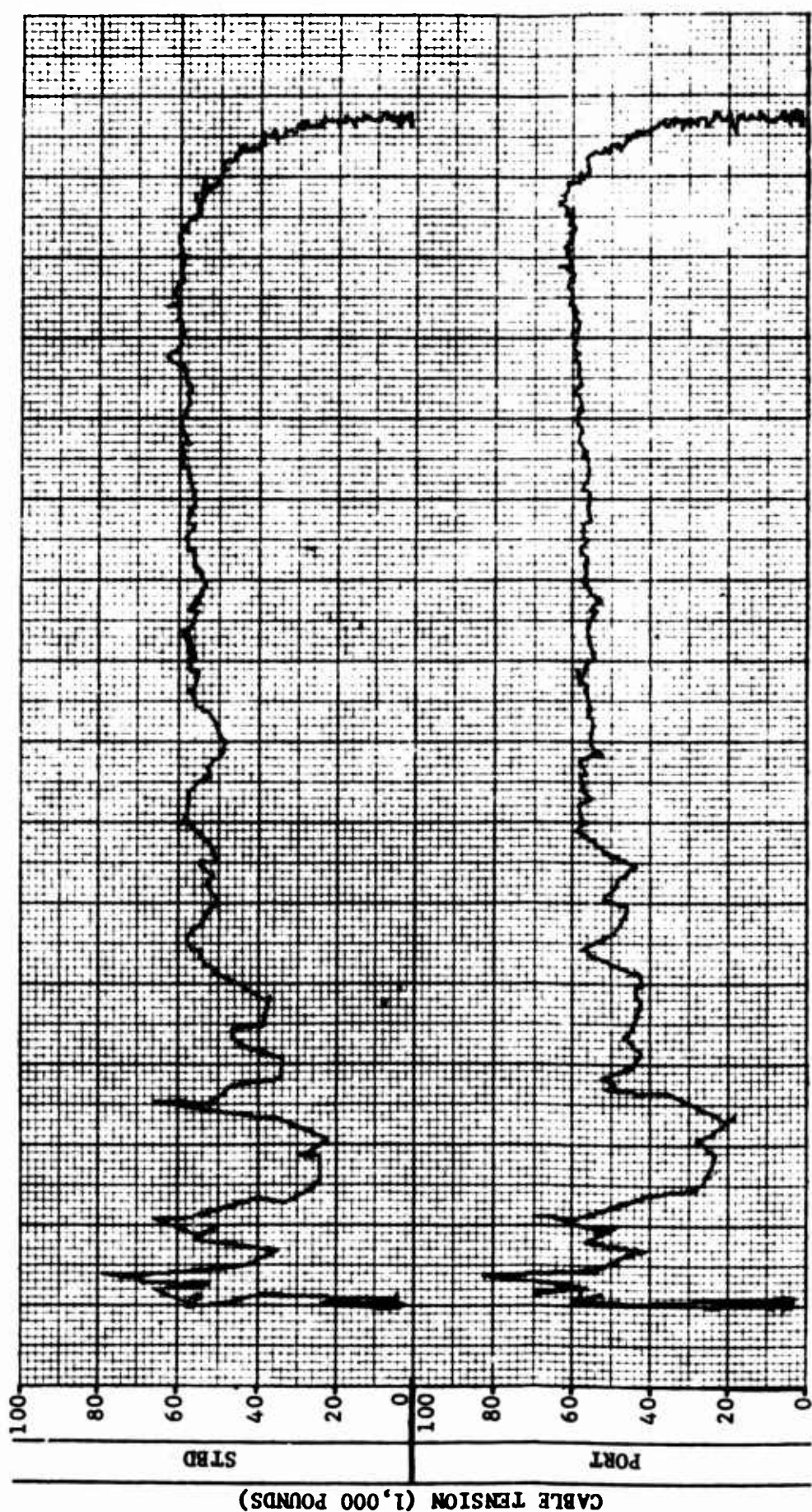
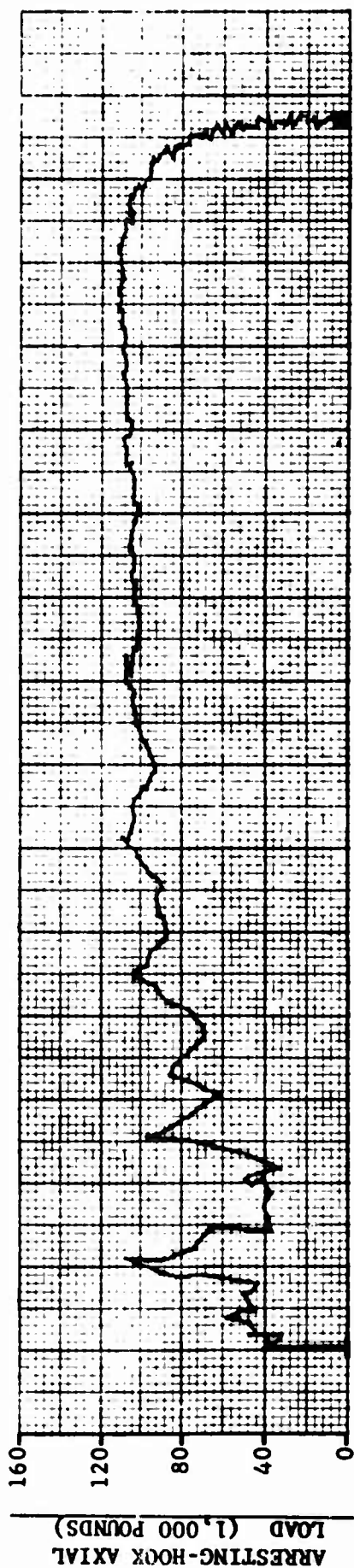


Figure A12 - Time History of Event 22183: ON-CENTER Arrestment of a 32,800-Pound F-4A Aircraft at an Engaging Speed of 127 Knots (Mark 7 Mod 3 Arresting Gear Configured Without Sheave Dampers)

B



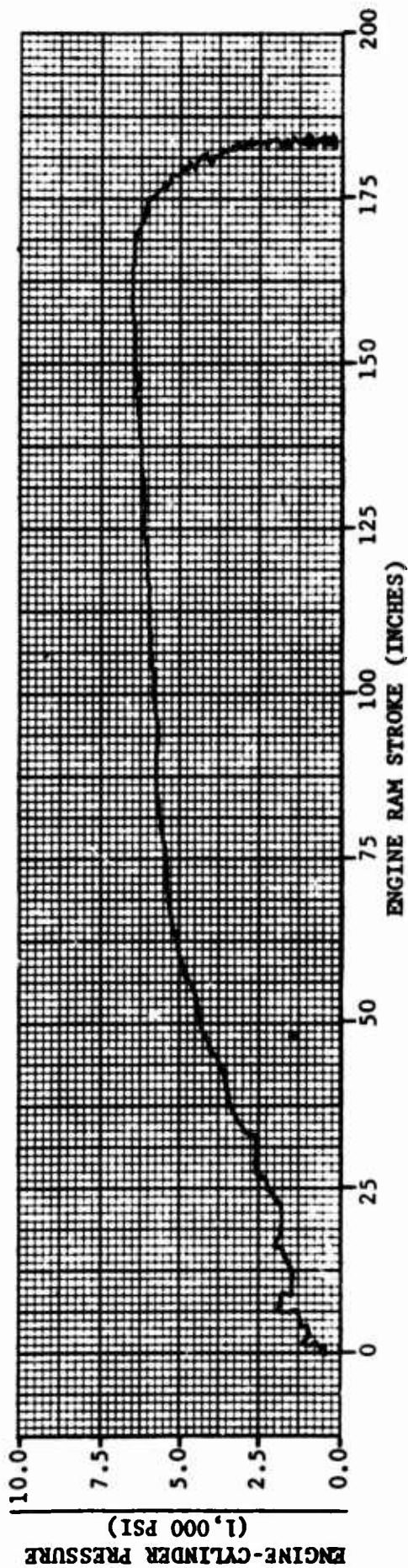
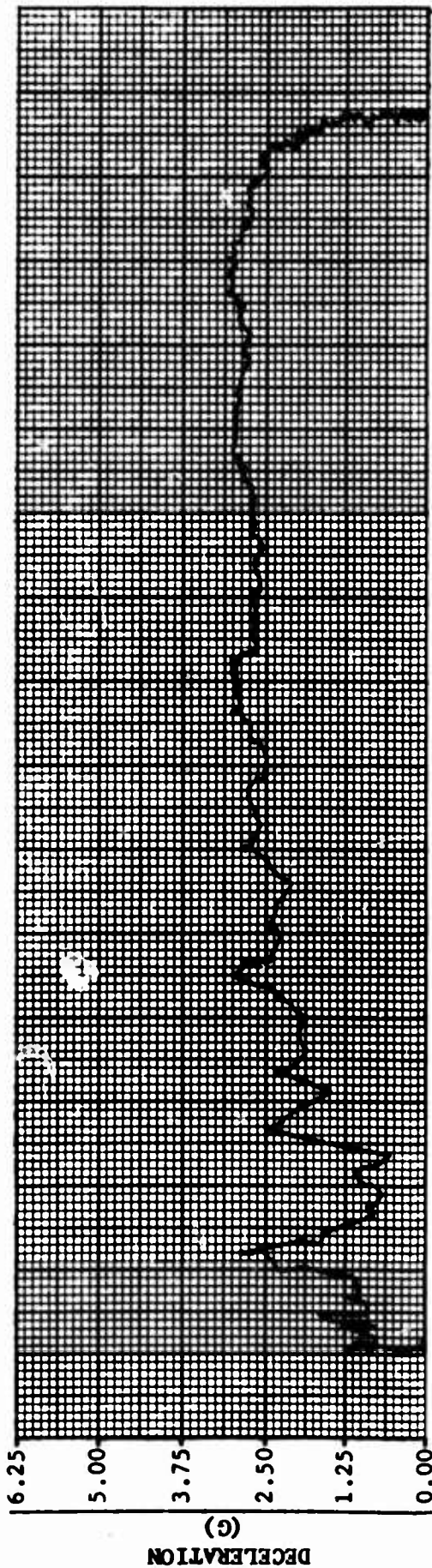
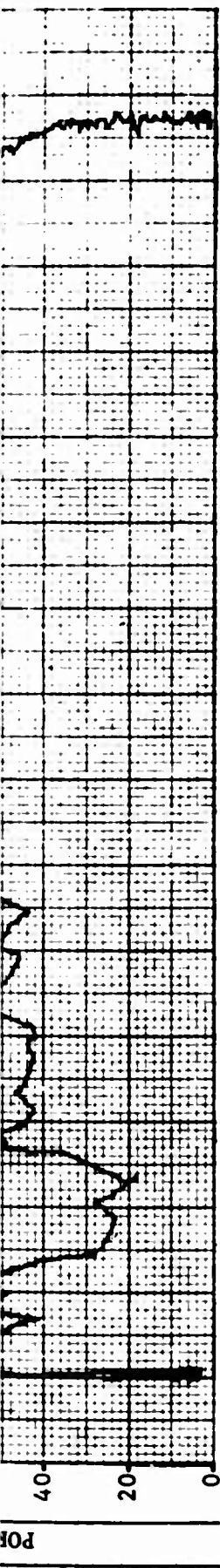
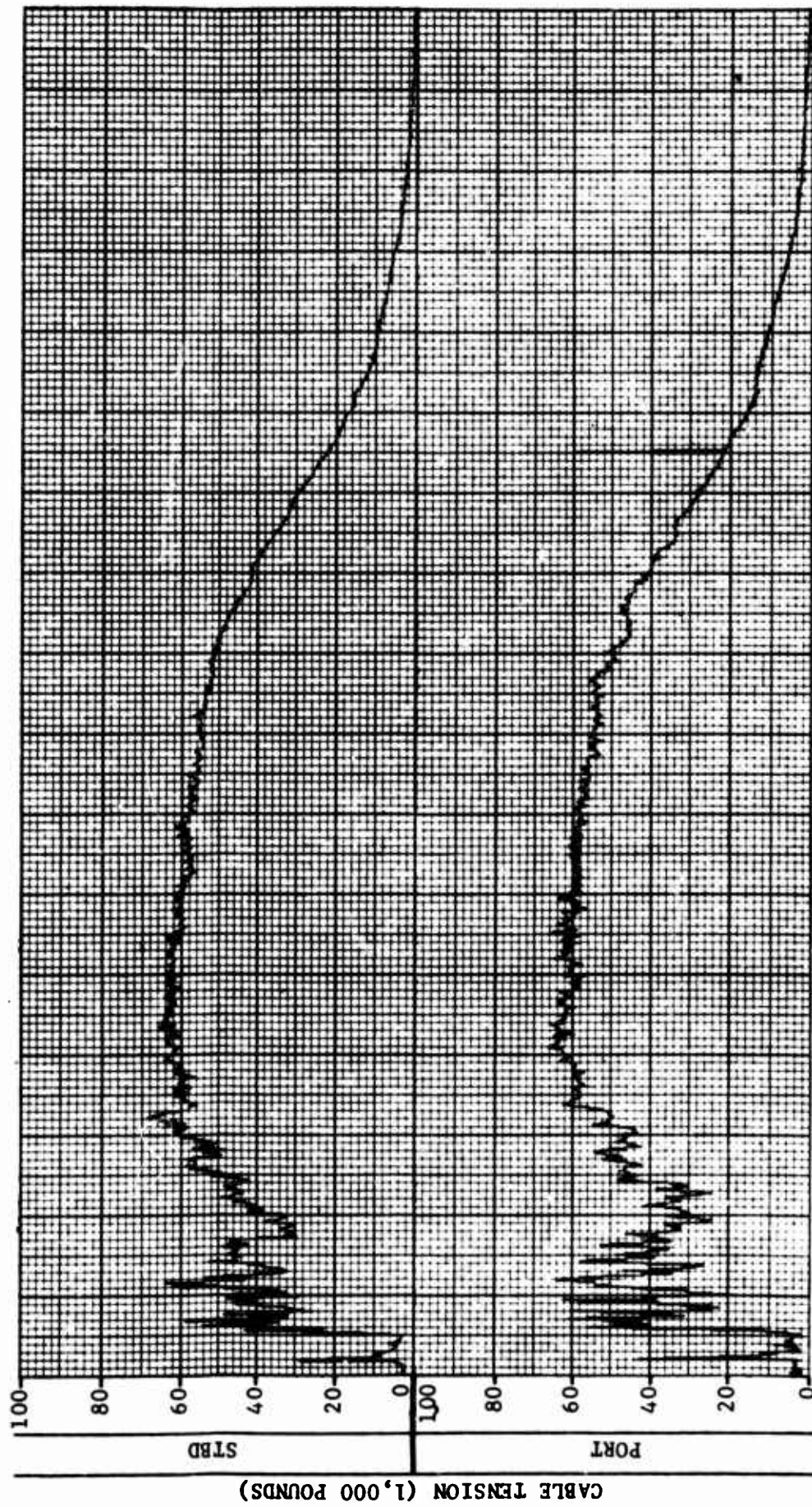
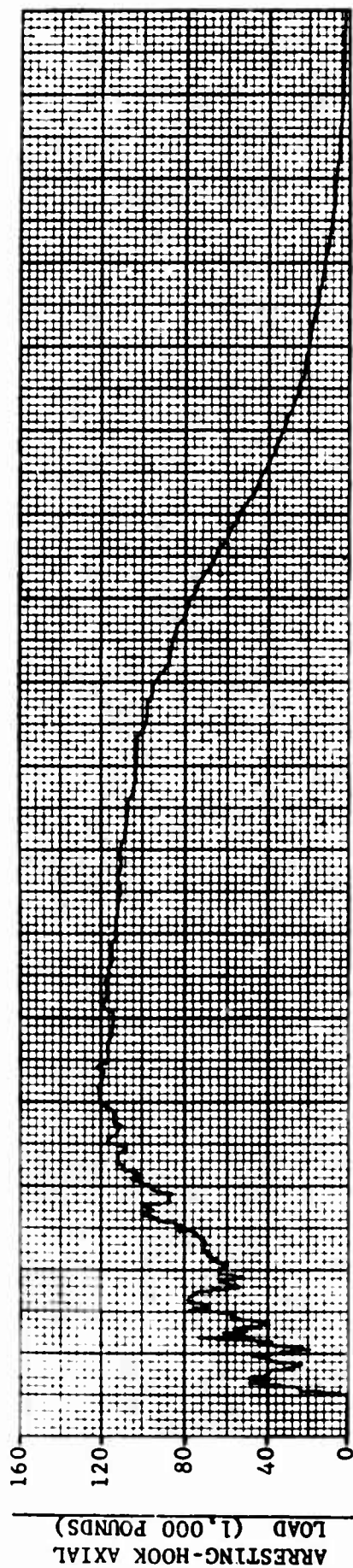


Figure A12 - Continued



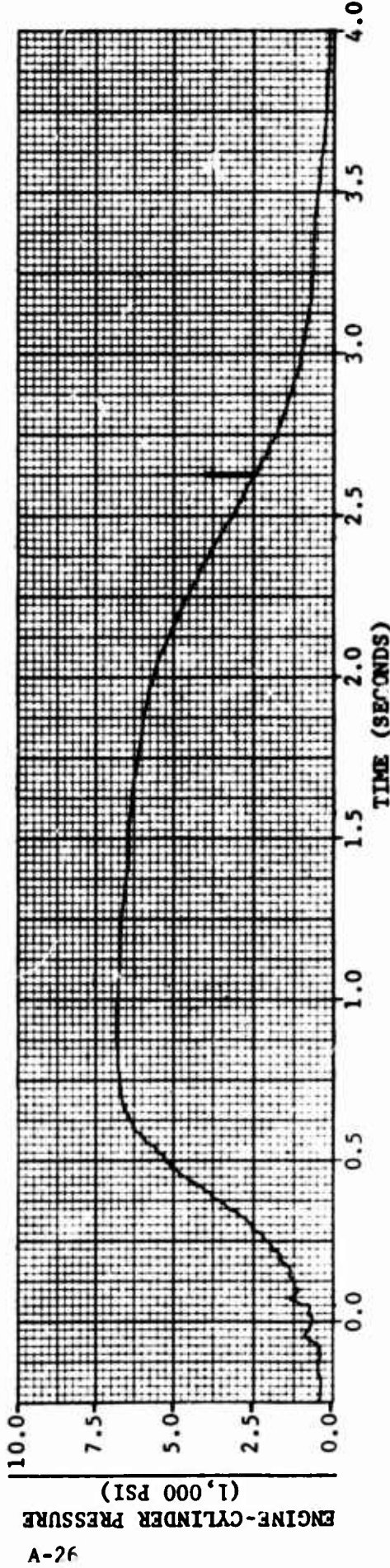
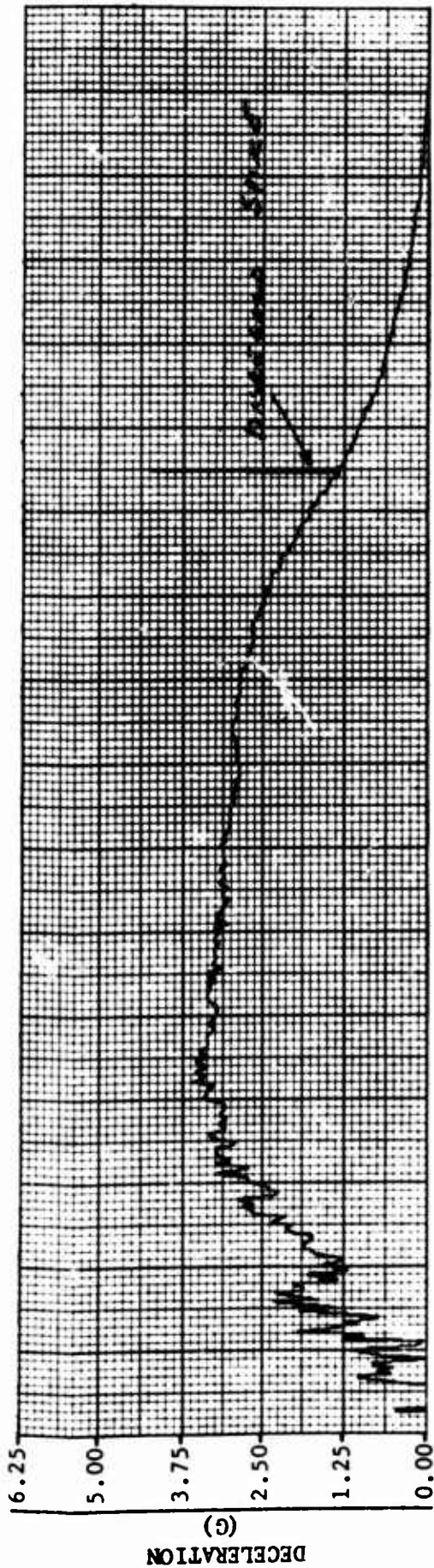
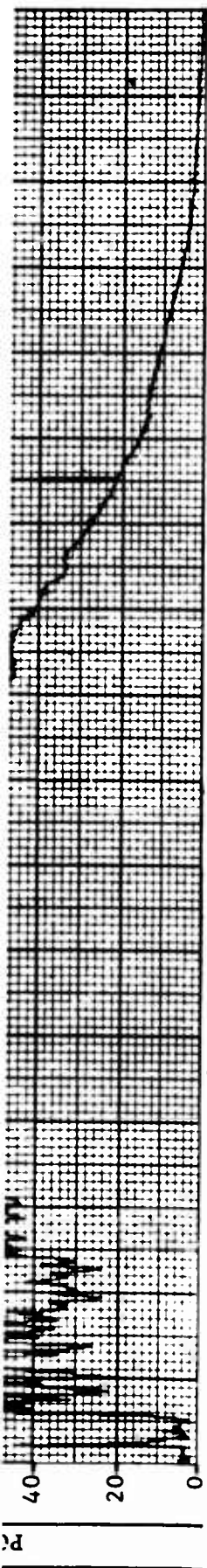
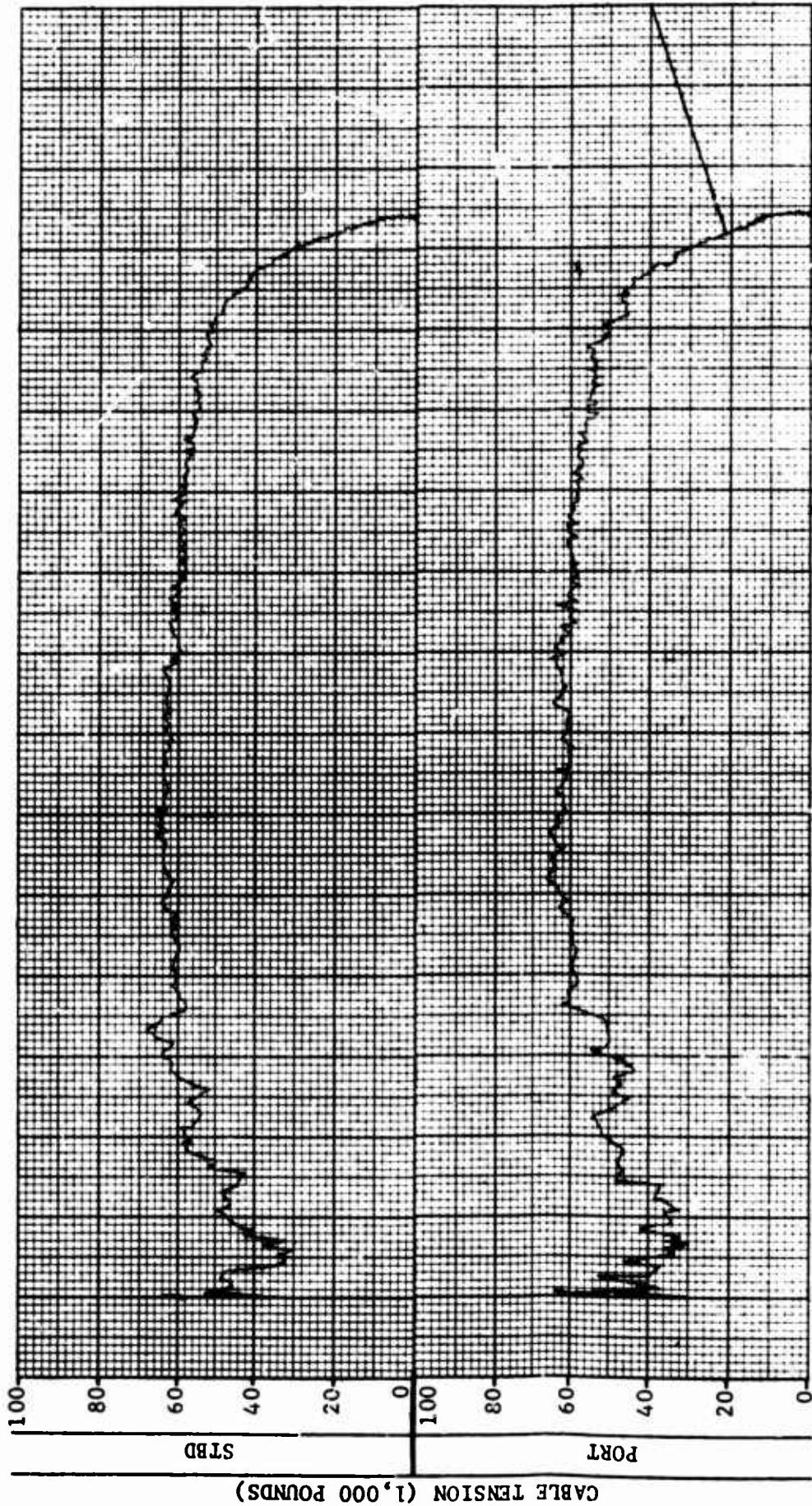
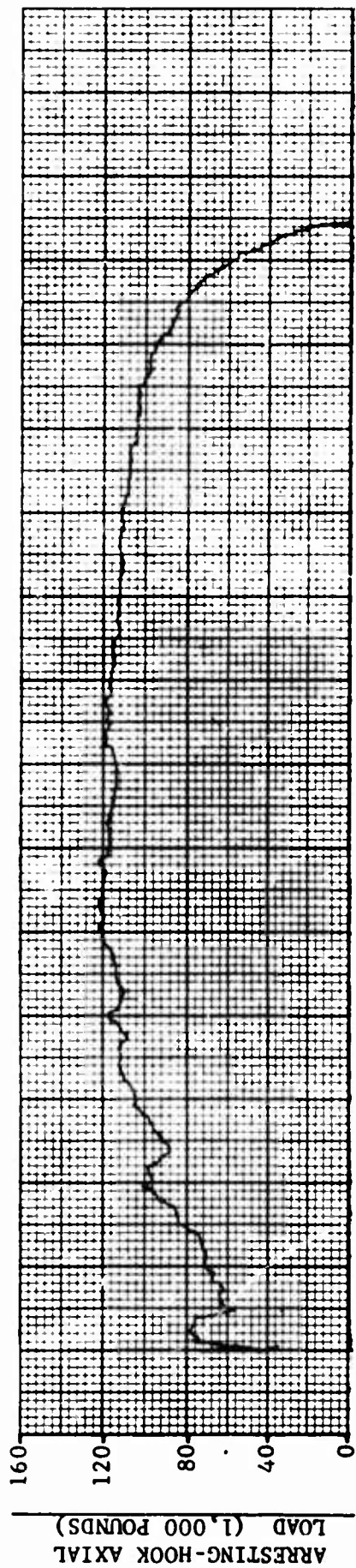
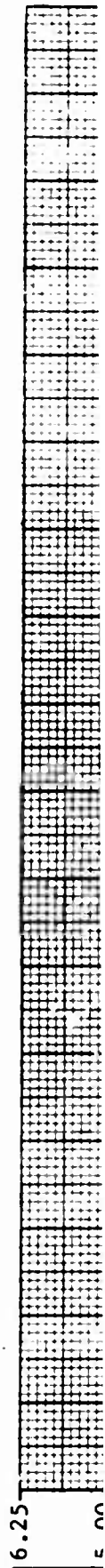


Figure A13 - Time History of Event 23558: ON-CENTER Arrestment of a 30,800-Pound F-4A Aircraft at an Engaging Speed of 132 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sheave Dampers, Using a Single Weight Setting)



A



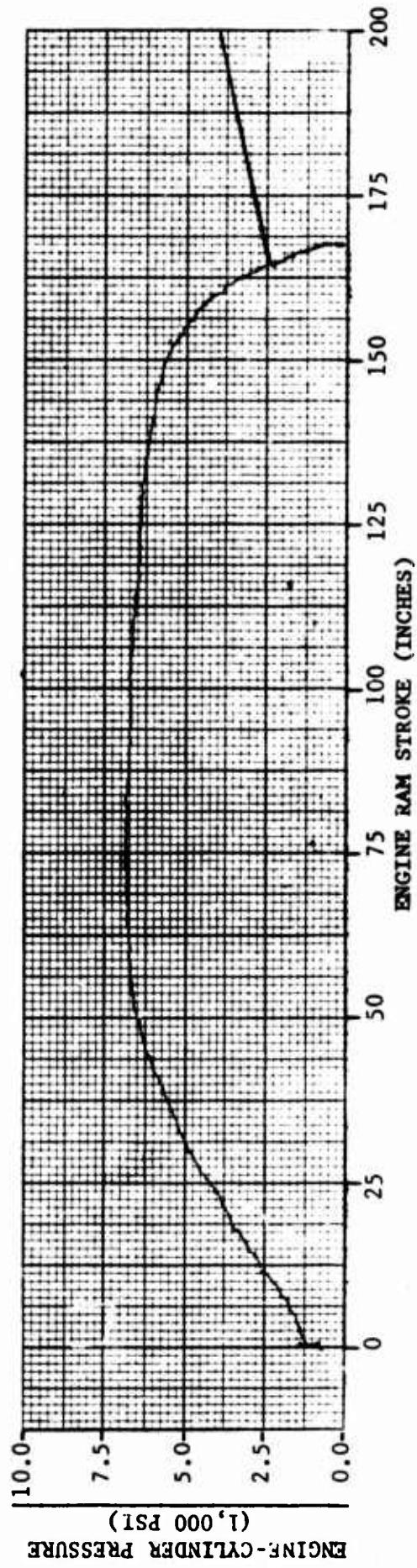
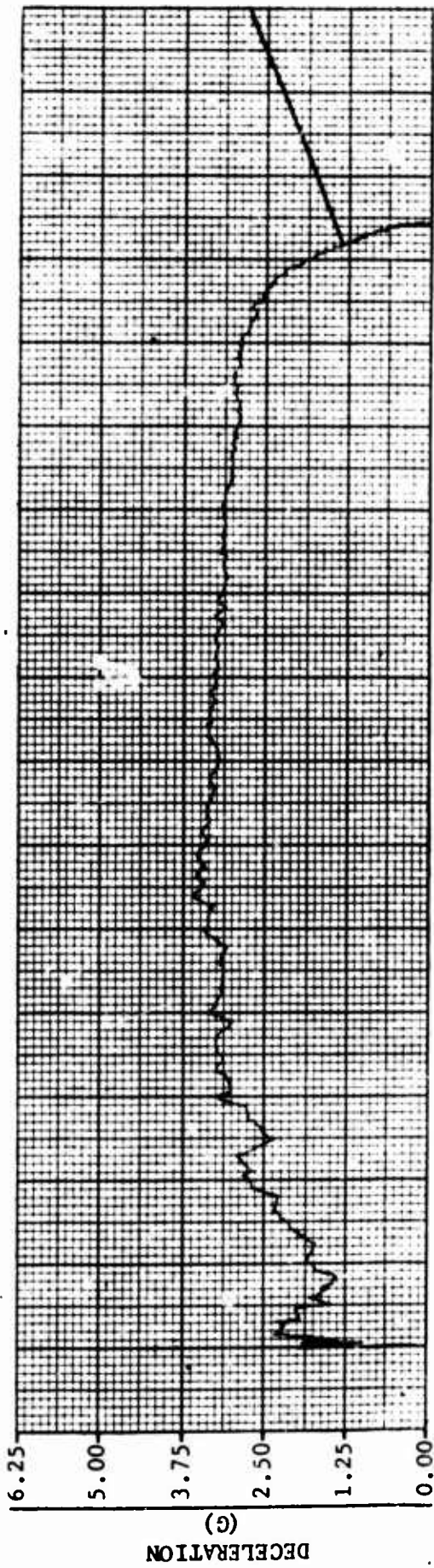
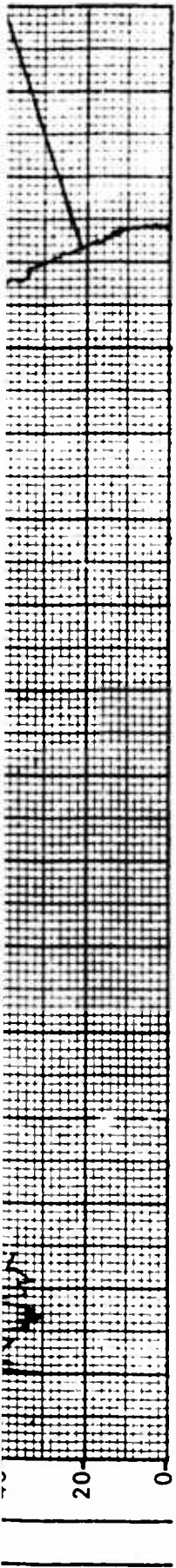
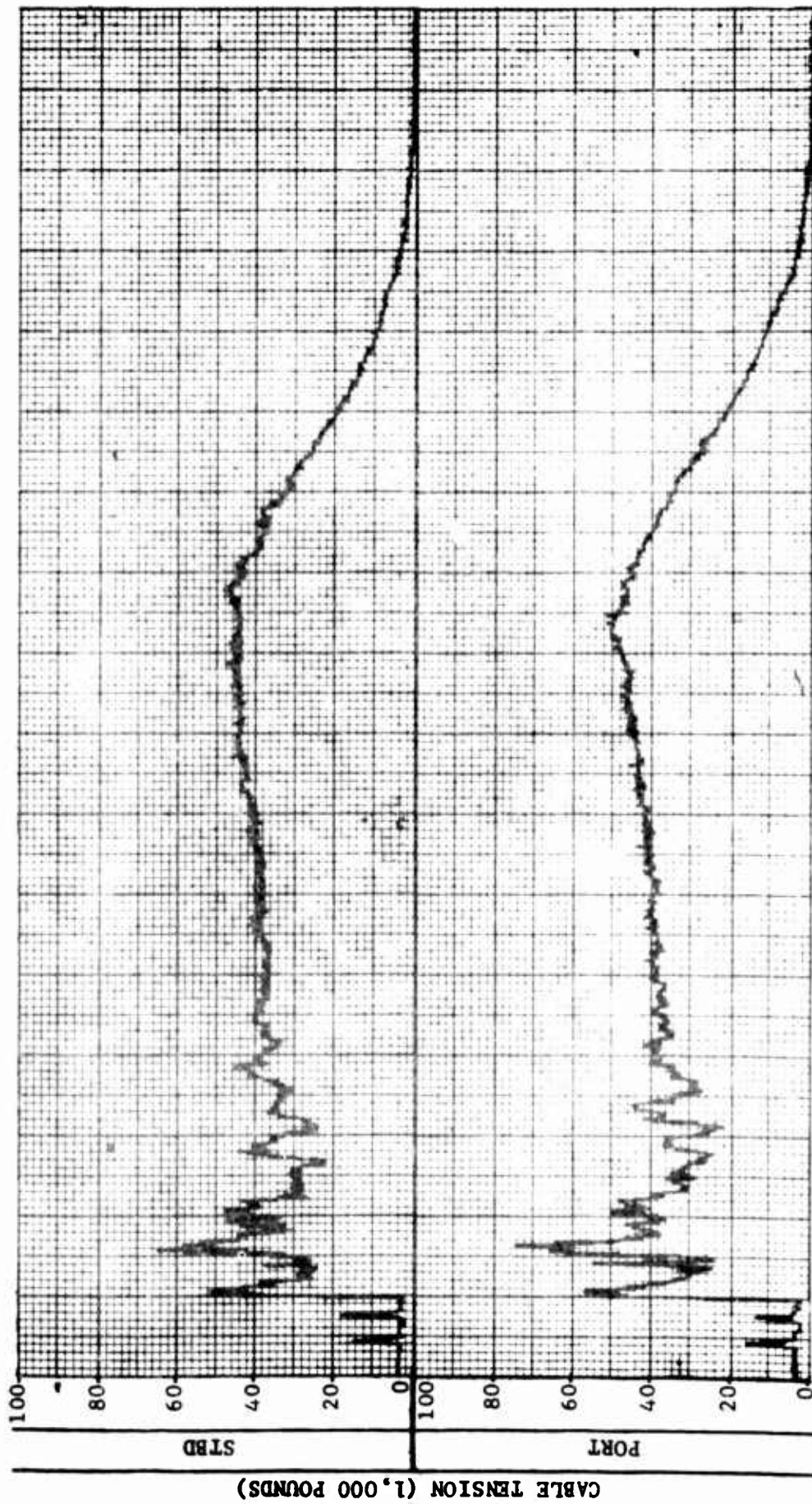
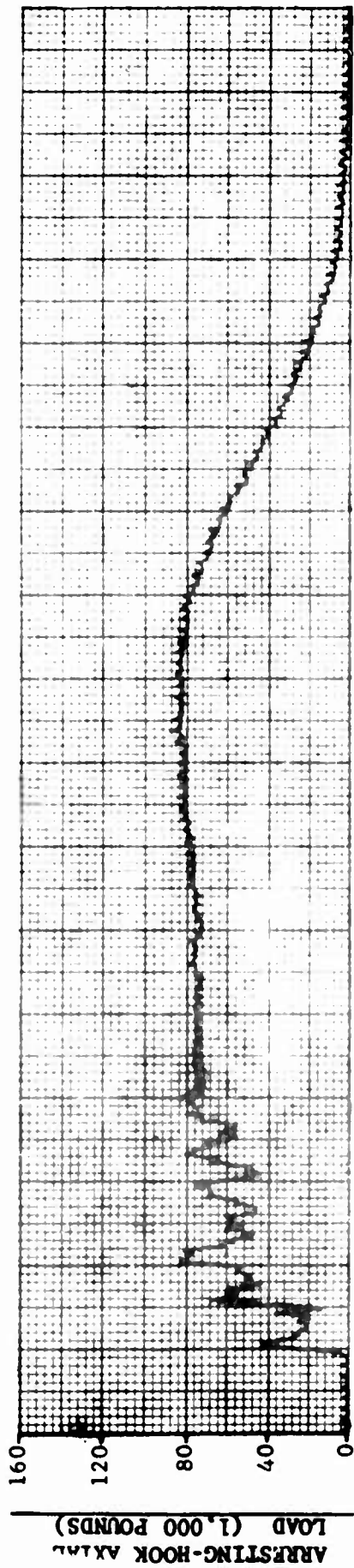


Figure A13 - Continued)

A-27

B



A

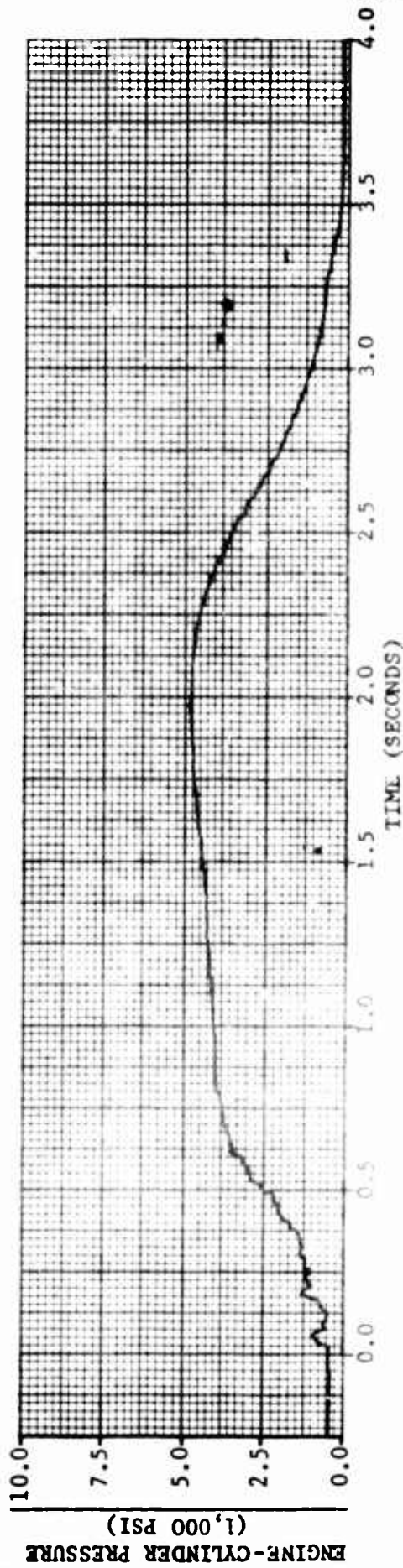
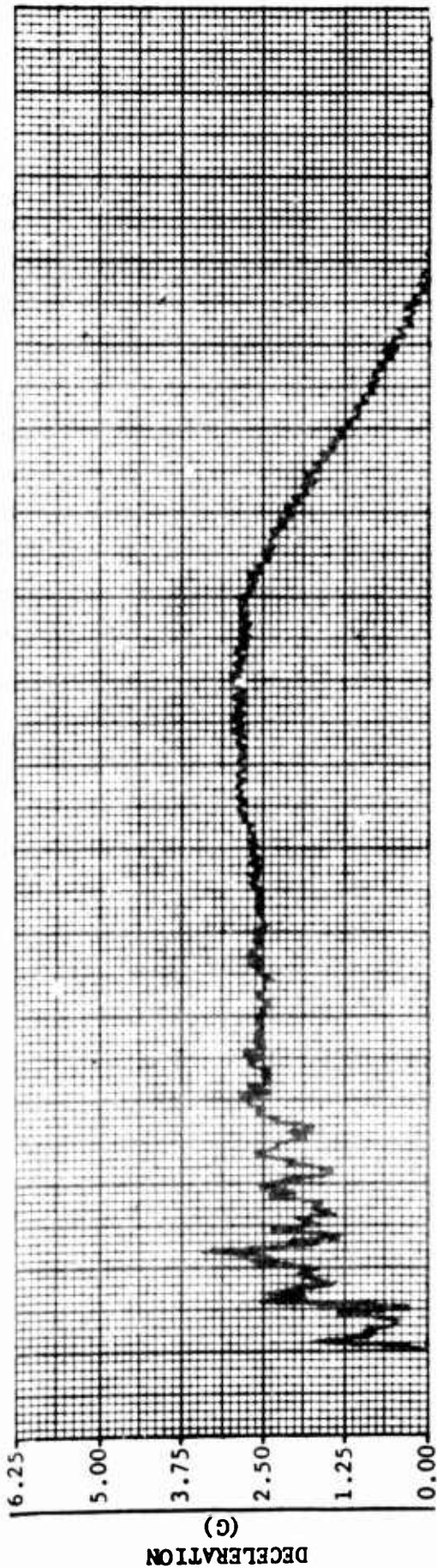
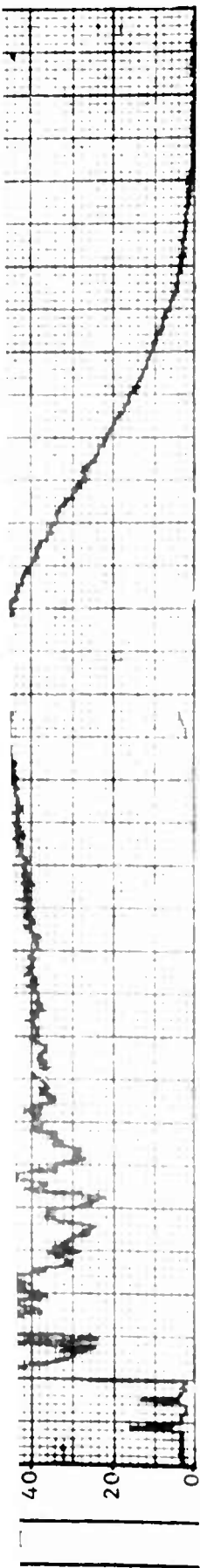
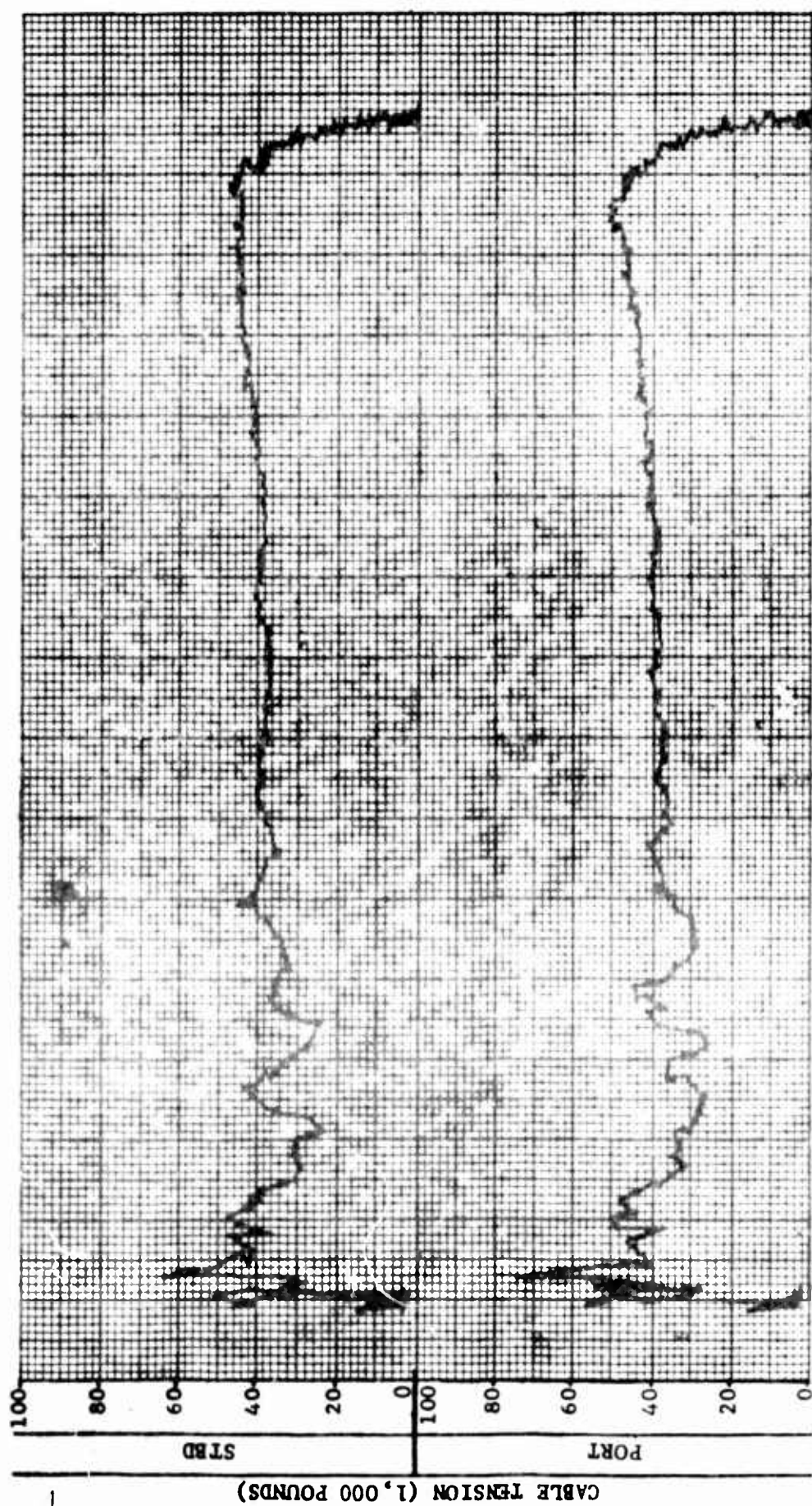
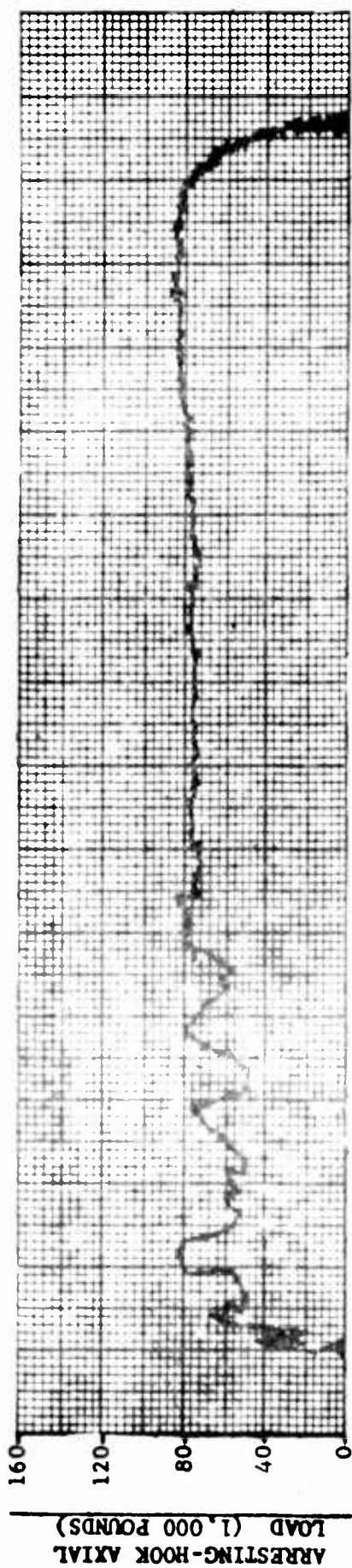


Figure A14 - Time History of Event 21665: ON-CENTER Arrestment of a 22,000-Pound Aircraft at an Engaging Speed of 139 Knots (Mark 7 Mod 3 Arresting Gear Configured with Sheave Dampers)



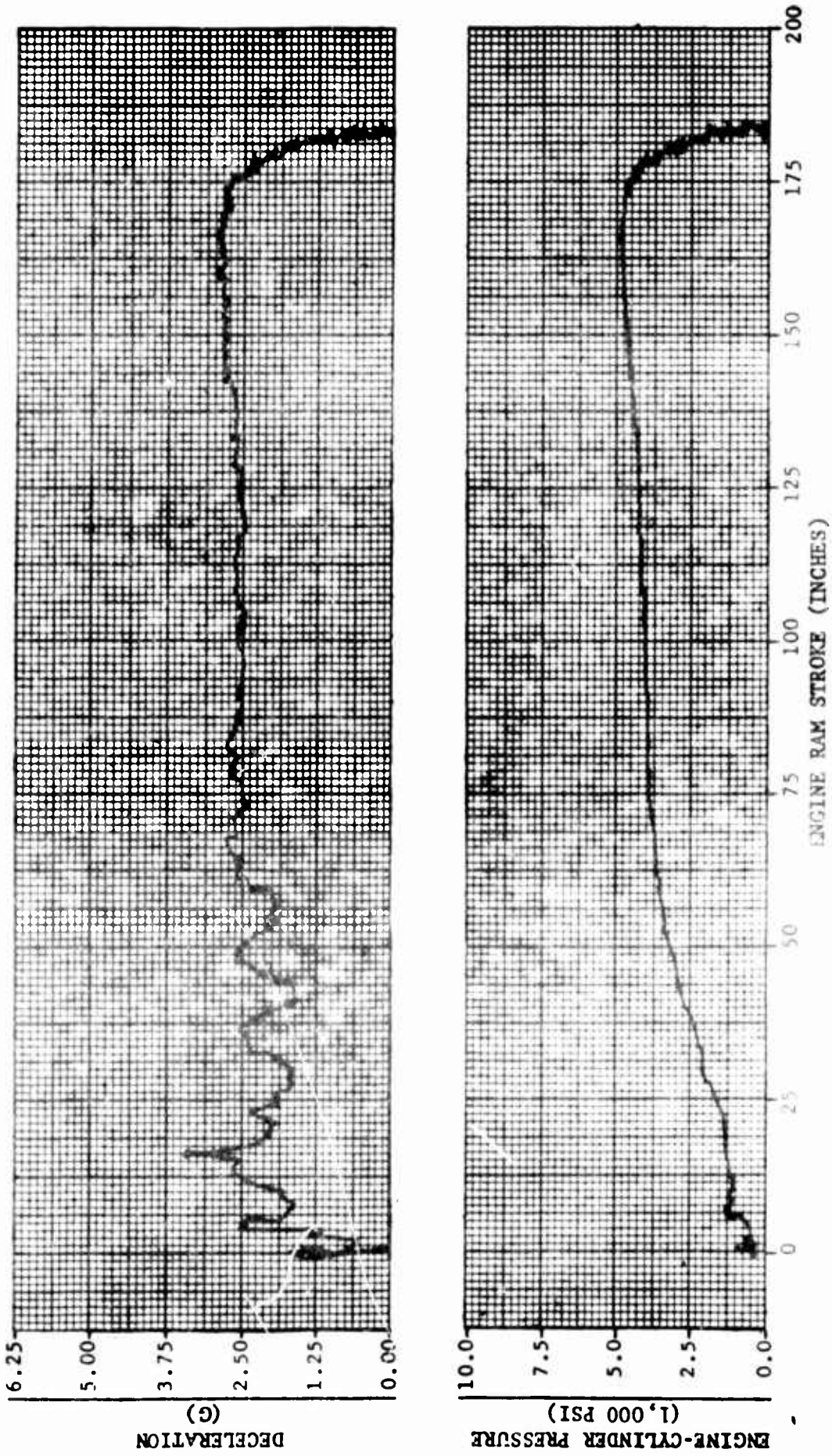
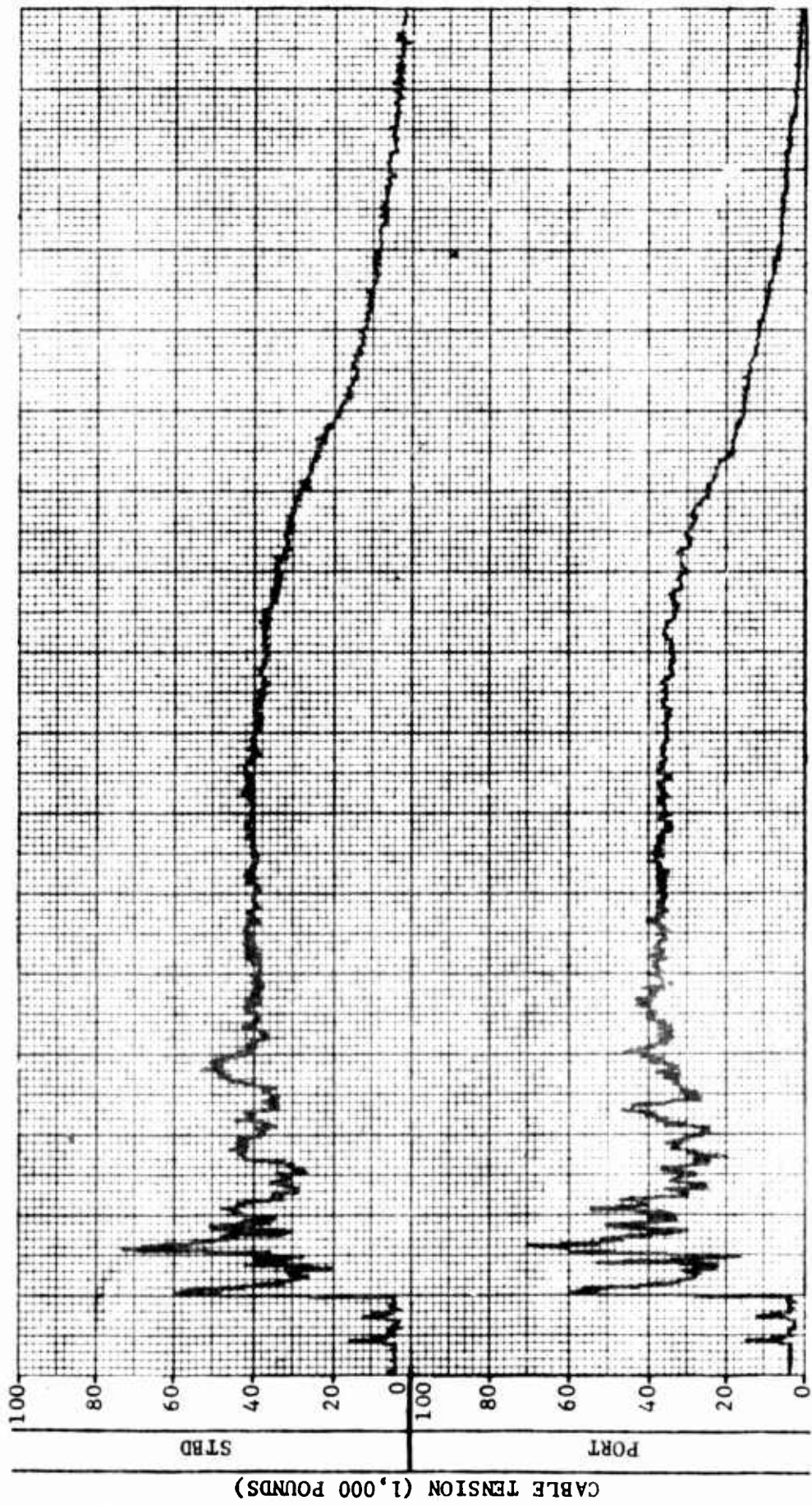
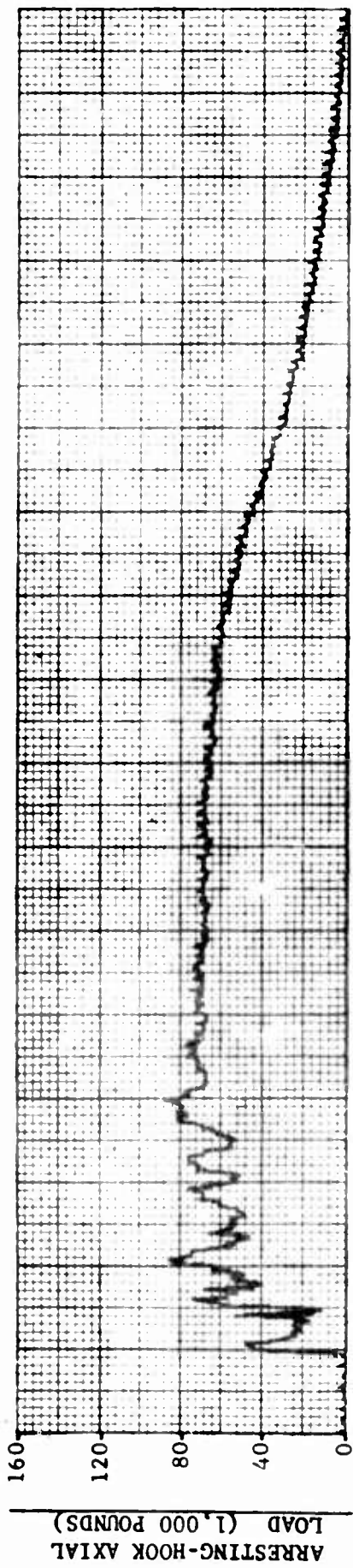


Figure A14 - Continued



H

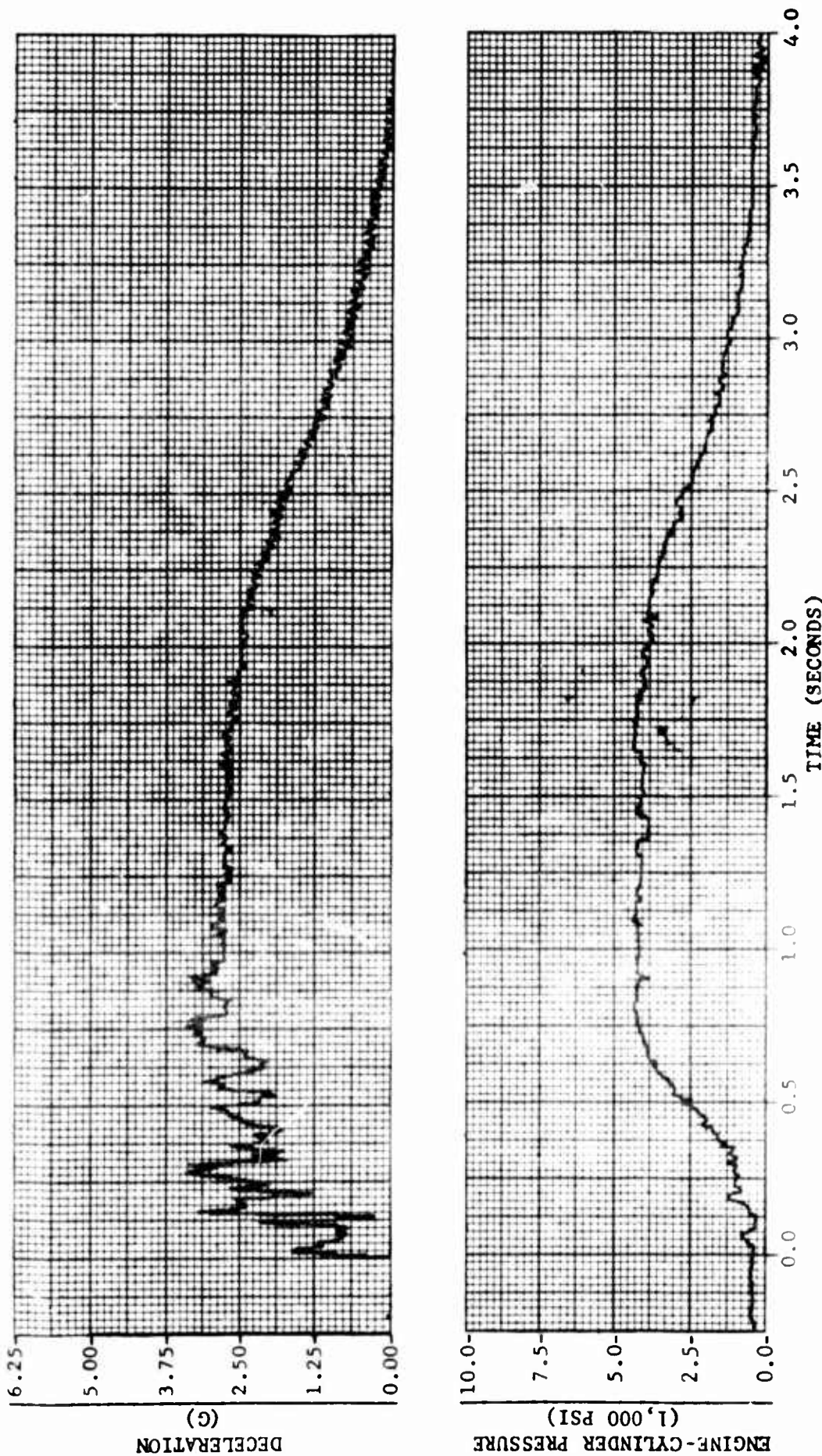
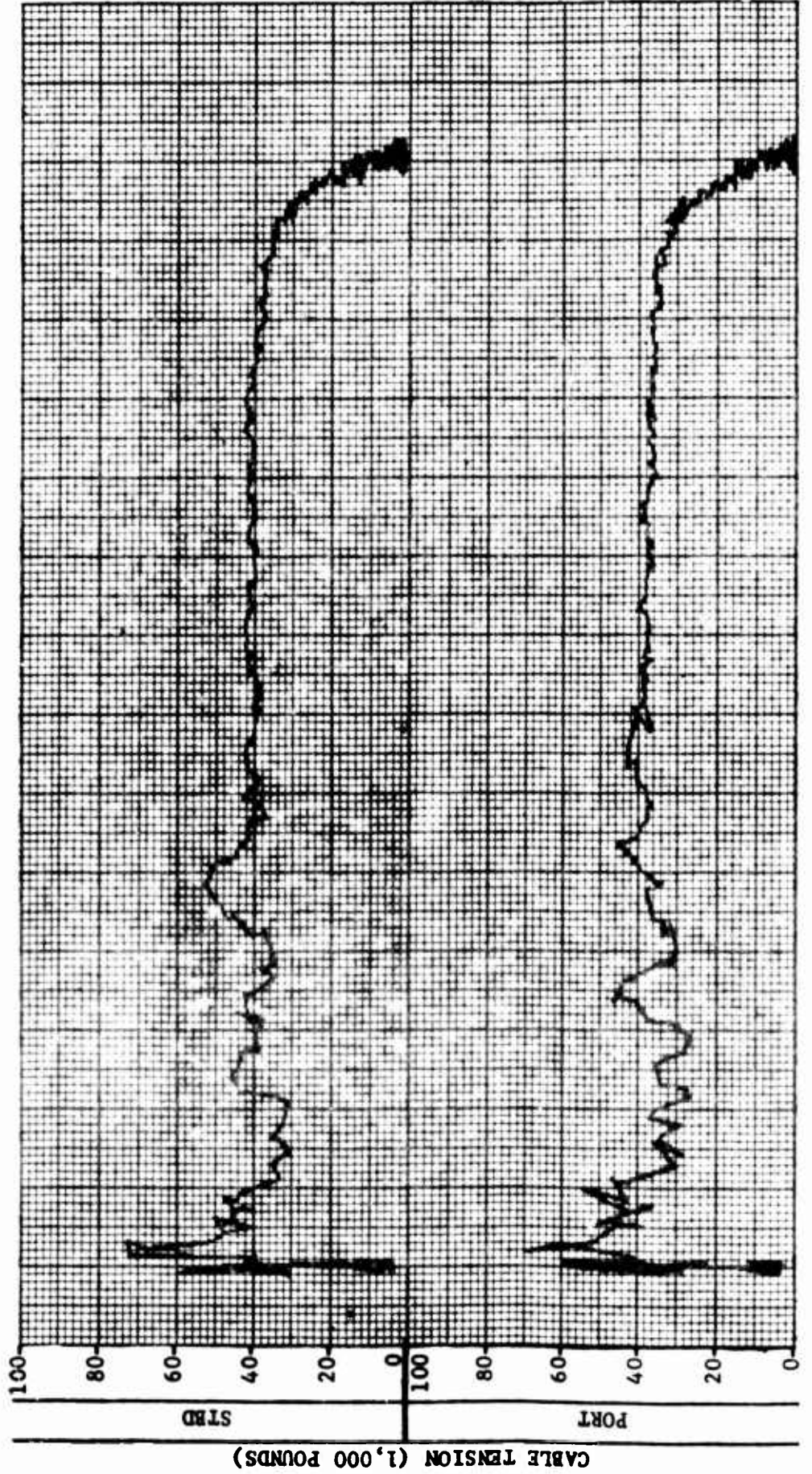
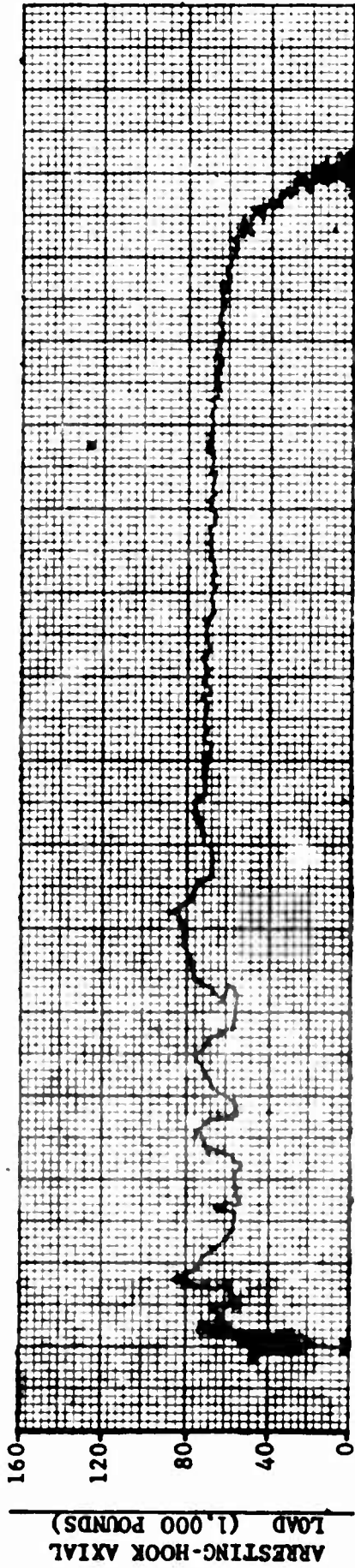


Figure A15 - Time History of Event 22045: ON-CENTER Arrestment of a 21,000-Pound F-8D Aircraft at an Engaging Speed of 143 Knots (Mark 7 Mod 3 Arresting Gear Configured With Sleave Dampers, Using a Single Weight Setting)



A

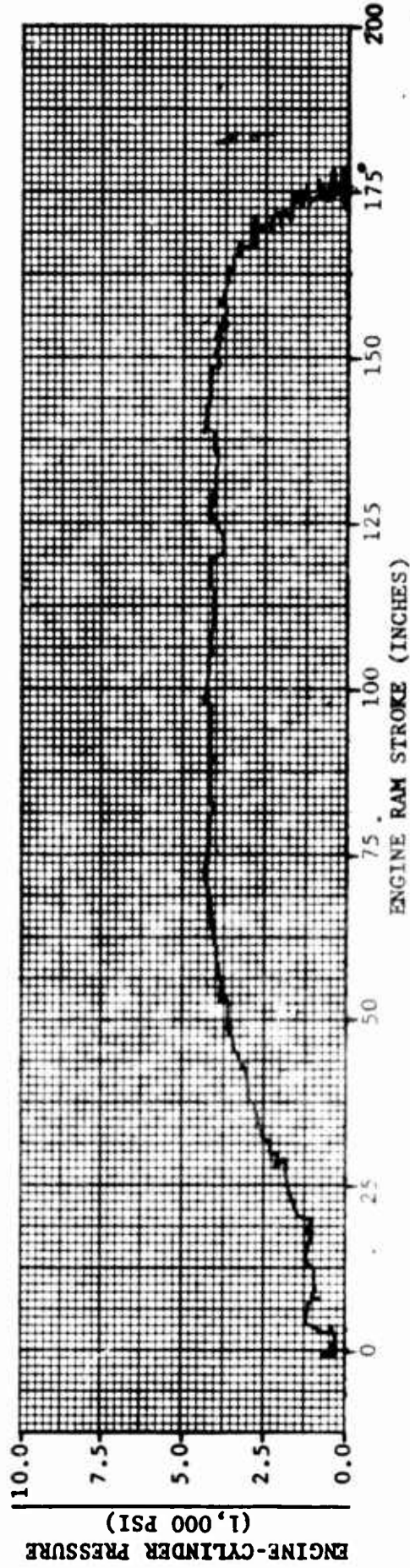
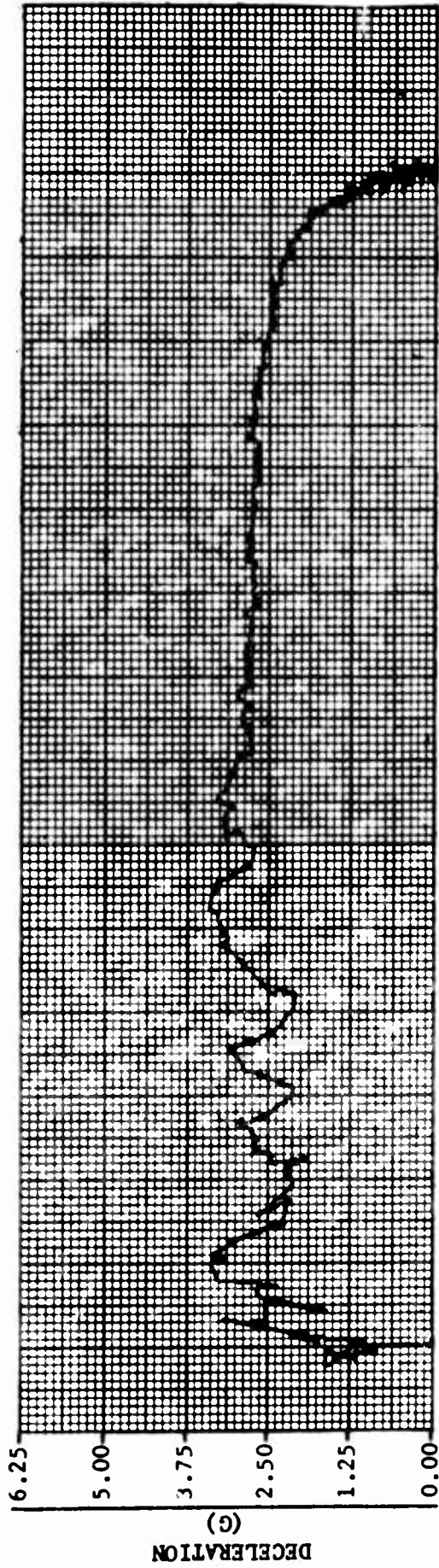


Figure A15 - Continued

EVENT NO.	81823	21713	21599	21650	21610	21601	21611	21651	21824	21652
DATE	11 JUN 67	20 JUN 67	2 JAN 67	13 JUN 67	8 JUN 67	7 JUN 67	8 JUN 67	13 JUN 67	11 JUL 67	13 JUN 67
AIR-CRAFT	A-3A									
CONFIGURATION	CLEAN									
GROSS WEIGHT (LB)	50,100	48,800	49,800	49,200	49,700	49,300	49,400	48,900	49,900	48,200
ARG WEIGHT SETTING	50,000	49,000	50,000	49,500	49,500	49,500	49,500	49,000	50,000	49,000
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND VEL (KN)	0	9	5	5	8	5	4	5	0	9
CON- WIND REL DIR (°)	0	030	270	175	315	270	315	175	0	180
DITION TEMPERATURE (° F)	78	68	81	—	84	81	84	—	79	—
PRESSURE (IN. HG)	29.725	29.795	30.010	—	30.100	30.010	30.100	—	29.725	—
ENGAGING SPEED (KN)	98	117	119	124	125	128	133	134	134	137
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	0	0	0
ENGINE WIRE PICKUP	89	98	86	95	82.8	94.8	98.3	99	95	96
RPM (Z)	94	101	102	101	101	100.4	102	100	97	101
ARREST- AXIAL LOAD (LB)	100,330	144,040	143,664	161,176	156,904	170,434	176,552	184,592	169,688	189,252
ING HOOK TIME (SEC)	2.387	1.933	1.420	1.411	1.140	1.149	1.094	1.675	1.634	1.097
LONG. LOAD (G)	2.232	2.742	2.678	2.951	2.974	3.311	3.402	3.362	3.412	3.616
DECEL TIME (SEC)	2.725	2.001	1.045	1.844	1.378	0.894	1.391	1.646	1.372	0.926
CABLE PORT (LB)	60,949	83,807	81,019	92,357	95,943	95,065	98,647	100,610	99,976	104,245
TENSION STARBOARD (LB)	58,667	72,309	76,833	81,218	79,879	92,060	92,907	96,972	97,676	93,859
CYLINDER PRESSURE (PSI)	5734	8172	8049	9113	9051	9700	9870	10,450	12,341	10,596
RAM TRAVEL (IN.)	182	183	183	183	184	184	184	183	186	182
BATTERY POSITION (IN.)	8 15/16	3 3/8	5 3/4	4 9/16	5 1/8	5 1/2	5 1/8	4 9/16	5 3/16	4 9/16
DIST FROM TWO-BLOCK (KN)	4	6	3	—	—	2	—	—	—	—
REMARKS:										

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	21694	21613	21644*	21653	21712	21710	21695*	21711*	22080
DATE	15 JUN 67	8 JUN 67	8 JUN 67	13 JUN 67	20 JUN 67	20 JUN 67	15 JUN 67	20 JUN 67	11 AUG 67
AIR-CRAFT	A-3A	A-3A	A-3A						
TYPE	CLEAN	CLEAN	CLEAN						
CONFIGURATION									
GROSS WEIGHT (LB)	48,500	49,000	48,600	48,100	49,000	49,200	48,100	49,800	50,000
ARG WEIGHT SETTING	48,500	49,000	48,600	48,000	49,000	50,000	48,000	49,000	50,000
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND	10	5	5	7	10	15	5	15	3
REL DIR (°)	330	330	000	180	030	030	315	030	090
TEMPERATURE (° F)	80	84	87	68	68	68	80	068	70
PRESSURE (IN. HG)	29.920	30.100	30.100	—	29.705	29.775	29.920	29.795	30.060
ENGAGING SPEED (KN)	137	106	113	117	124	123	125	126	130
OFF-CENTER DISTANCE (FT)	0	20 P	20 P	20 P	20 P	20 P	20 P	20 P	20 P
ENGINE WIRE PICKUP	100	101	97	91	97	98	99	97	96
RPM (Z)	95	103	99.6	101	102	102	102	101	101
MAX ARG AXIAL LOAD	135,912	127,453	135,912	146,582	124,238	165,000	164,560	174,040	181,816
ARREST-AXIAL LOAD (LB)	135,912	127,453	135,912	146,582	124,238	165,000	164,560	174,040	181,816
ING HOOK TIME (SEC)	1.716	1.873	1.742	2.094	1.796	1.739	1.817	1.807	1.749
LONG. LOAD (G)	3.582	2.463	2.640	2.730	3.260	3.045	3.190	3.178	3.457
DECEL TIME (SEC)	0.806	1.462	1.257	1.007	1.258	1.527	1.423	1.278	1.252
CABLE PORT (LB)	96,274	84,445	88,387	95,157	106,862	119,373	103,561	106,092	110,038
TENSION STARBOARD (LB)	96,274	84,445	88,387	95,157	106,862	119,373	103,561	106,092	110,038
CYLINDER PRESSURE (PSI)	1036	9001	7982	8345	9809	9300	9396	9685	10,436
RAM TRAVEL (IN.)	184	181	183	182	186	184	184	185	177
BATTERY POSITION (IN.)	4 3/4	5	4 3/4	4 9/16	4 1/2	3 3/8	4 3/4	3 3/8	3 1/2
DIST FROM TWO-BLOCK (IN)	—	—	—	—	—	5	—	—	12
REMARKS:									

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Shoe Dampers, ACTUAL Weight Setting

EVENT NO.	21692	21612	22081	21617	21693	21636	21637	21638	21640
DATE	15 JUN 67	8 JUN 67	11 JUN 67	8 JUN 67	15 JUN 67	9 JUN 67	9 JUN 67	9 JUN 67	9 JUN 67
AIR-CRAFT	A-3A								
CONFIGURATION	CLEAN								
GROSS WEIGHT (LB)	49,400	49,200	49,800	47,800	48,800	44,400	41,000	40,600	40,100
ARG WEIGHT SETTING	49,500	49,000	50,000	48,000	49,000	41,500	41,000	40,500	40,000
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND REL DIR (°)	5	5	3	3	3	5	5	5	4
CON-DITION	315	330	090	270	330	315	315	335	335
TEMPERATURE (° F)	80	84	70	84	80	84	84	84	84
PRESSURE (IN. HG)	29.920	30.100	30.060	30.100	29.920	29.908	29.908	29.908	29.908
ENGAGING SPEED (KN)	133	135	136	113	115	98	110	120	129
OFF-CENTER DISTANCE (FT)	20 P	20 P	20 P	20.5	20.5	0	0	0	0
ENGINE WIRE PICKUP	100	99.5	100	81.4	76	96.4	95	92	86
RPM (%)	95	103	101	90.5	100	100	101	101	99
ARREST-ING HOOK	180,440	182,000	194,256	118,216	138,480	100,054	112,063	127,136	134,928
TIME (SEC)	1.730	1.472	1.709	0.953	1.538	2.475	2.185	1.878	1.955
LONG. LOAD (G)	3.457	3.646	3.652	2.640	2.649	2.012	2.322	2.794	3.134
DECEL. TIME (SEC)	1.087	1.541	1.054	0.964	1.925	2.314	2.050	1.882	0.868
CABLE PORT (LB)	113,364	NV	113,812	56,289	65,111	63,658	69,182	71,988	72,914
TENSION STARBOARD (LB)	79,692	81,893	90,696	71,539	83,499	49,804	57,619	68,093	73,344
CYLINDER PRESSURE (PSI)	10,207	10,314	11,211	6,284	7830	5,295	6,403	7,317	7,617
RAM TRAVEL (IN.)	185	185	178	184	183	182	182	183	184
BATTERY POSITION (IN.)	4 3/4	5	3 1/2	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4	4 3/4
DIST FROM TWO-BLOCK (KN)			11						
REMARKS:									

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Shoe Dampers, ACTUAL Weight Setting

EVENT NO.	21639	2715	22003	22049	22053	22002	22050	22054	22087*
DATE	9 JUN 67	20 JUN 67	28 JUL 67	8 AUG 67	8 AUG 67	28 JUL 67	8 AUG 67	28 JUL 67	14 AUG 67
AIR-CRAFT	A-3A								
TYPE									
CONFIGURATION	CLEAN								
GROSS WEIGHT (LB)	40,300	41,300	40,500	42,000	40,800	41,600	41,600	42,000	41,600
ARG WEIGHT SETTING	40,500	41,500	40,500	42,000	41,000	42,000	41,500	42,000	42,000
TYPE LANDING	TA	KA	TA	TA	TA	TA	TA	RA	RA
AMBIENT	4	10	4	5	4	-	5	2	0
WIND									
REL DIR (°)	335	030	220	210	210	-	210	270	0
TEMPERATURE (° F)	84	68	79	-	-	79	-	79	68
PRESSION (IN. HG)	29.908	29.795	29.900	30.08	-	29.900	30.008	29.900	30.090
ENGAGING SPEED (KN)	132	143	147	148	149	154	124	129	129
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	20 P	20 P	20 P
ENGINE WIRE PICKUP	96.2	72	96	94.2	90	90	95	89	93
RPM (%) MAX ARG AXIAL LOAD	102	82	-	99.5	100	100	98.7	NV	100
ARREST-AXIAL LOAD (LB)	152,016	167,504	NV	189,584	174,592	188,848	148,848	NV	152,040
ING HOOK TIME (SEC)	1.866	1.767	NV	1.661	1.709	1.515	1.908	NV	1.986
LONG. LOAD (G)	3.372	3.664	4.123	4.153	3.915	4.333	3.172	3.165	3.389
DECEL TIME (SEC)	1.878	1.054	1.687	1.576	1.626	0.655	1.944	0.889	1.990
CABLE PORT (LB)	85,434	NV	99,505	104,234	94,818	103,711	91,415	63,243	94,048
TENSION STARBOARD (LB)	81,288	85,260	97,822	101,943	92,834	102,672	70,538	98,463	76,703
CYLINDER PRESSURE (PSI)	8749	9779	10,888	11,256	10,367	11,336	8895	8643	9311
RAM TRAVEL (IN.)	184	185	185	185	181	184	183	183	180
BATTERY POSITION (IN.)	4 3/4	3 15/16	4 1/4	4 1/4	3 1/2	4 1/4	4 1/8	4 1/4	3 3/4
DIST FROM TWO-BLOCK (KN)	-	-	9	7	11	10	9	9	9
REMARKS:									

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	22051	22083*	22084*	22088*	22052				
DATE	8 AUG 67	11 AUG 67	11 AUG 67	14 AUG 67	8 AUG 67				
TYPE	A-3A	→	→	→	→				
AIR-CRAFT	CLEAN	→	→	→	→				
GROSS WEIGHT (LB)	41,400	41,600	41,100	41,200	41,000				
ARG WEIGHT SETTING	41,500	42,000	41,500	41,000	41,000				
TYPE LANDING	TA	RA	TA	TA	TA				
AMBIENT	4	3	3	0	4				
WIND	REL DIR (°)	090	090	0	210				
CON-	TEMPERATURE (° F)	70	70	68	—				
DITION	PRESSURE (IN. HG)	30.060	30.060	30.090	30.008				
ENGAGING SPEED (KN)	135	135	135	141	150				
OFF-CENTER DISTANCE (FT)	20P	20P	20P	20P	20P				
ENGINE	WIRE PICKUP	94	100	94	100				
RPM (%)	MAX ARG AXIAL LOAD	99	101	99	100				
ARREST-	AXIAL LOAD (LB)	164,204	167,120	163,480	181,000				
ING HOOK	TIME (SEC)	1.813	1.901	1.850	1.771				
LONG.	LOAD (G)	3.623	3.607	3.561	3.872				
DECEL	TIME (SEC)	1.819	1.913	1.858	1.384				
CABLE	PORT (LB)	99,959	101,000	99,368	108,781				
TENSION	STARBOARD (LB)	77,537	76,600	75,205	88,465				
CYLINDER	PRESSURE (PSI)	9766	9811	9592	10,949				
RAM TRAVEL (IN.)		181	181	181	182				
BATTERY POSITION (IN.)		3 1/2	3 1/2	3 1/2	3 1/2				
DIST FROM TWO-BLOCK (KN)		11	—	—	10				
REMARKS:									

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH ACTUAL Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	22104	22105	22107	22111	22159	22109*	22115	22106*	22108
DATE	15 AUG 67	15 AUG 67	15 AUG 67	15 AUG 67	19 AUG 67	15 AUG 67	15 AUG 67	15 AUG 67	15 AUG 67
AIR-CRAFT	A-3A							A-3A	
CONFIGURATION	CLEAN							CLEAN	
GROSS WEIGHT (LB)	50,000	49,700	48,500	49,400	49,800	50,000	50,000	49,500	48,300
ARG WEIGHT SETTING	50,000	50,000	48,500	49,500	50,000	50,000	50,000	49,500	48,500
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND VEL (KN)	0	0	0	5	5	0	0	0	0
REL DIR (°)	0	0	0	060	340	0	0	0	0
TEMPERATURE (° F)	73	73	73	73	—	73	—	73	73
PRESSURE (IN. HG)	30.160	30.160	30.160	30.160	—	30.160	30.160	30.160	30.160
ENGAGING SPEED (KN)	100	111	127	129	132	133	133	101	110
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	20 P	20 P
ENGINE WIRE PICKUP	89	91	89	99	98	95	94	98	94
RPM (%) MAX ARG AXIAL LOAD	101	100	101	100	100	100	99	101	99
ARREST-ING HOOK	105.866	123.769	163.056	174.280	179.752	179.304	180.280	120.963	138.256
TIME (SEC)	1.076	1.000	1.805	1.906	1.053	1.547	1.582	2.071	2.085
LOAD (G)	2.045	3.435	3.095	3.311	3.519	3.321	3.411	2.237	2.587
TIME (SEC)	1.071	1.004	0.938	1.302	1.122	1.139	1.292	2.062	1.725
CABLE PORT (LB)	57.576	71.037	92.327	95.773	90.967	99.723		78.746	84.283
TENSION STARBOARD (LB)	57.297	69.110	84.882	87.958	93.709	93.109		58.145	64.527
CYLINDER PRESSURE (PSI)	5956	7113	9488	10,090	10,203	10,361	10317	6906	7890
RAM TRAVEL (IN.)	177	178	180	180	178	180	180	178	179
BATTERY POSITION (IN.)	3	3	2 7/8	2 3/8	2 1/8	2 7/8	2 1/2	3	2 7/8
DIST FROM TWO-BLOCK (KN)	12	11	9	9	12	9	9	11	10
REMARKS:									

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	22110*	22161*	22160		22133	22181	22130	22134	22174	22179
DATE	15 AUG 67	18 AUG 67	18 AUG 67		16 AUG 67	22 AUG 67	16 AUG 67	19 AUG 67	21 AUG 67	22 AUG 67
TYPE	A-3A				A-3A					
AIR-CRAFT										
CONFIGURATION	CLEAN				CLEAN					
GROSS WEIGHT (LB)	49,800	49,100	49,400		41,100	41,000	41,800	40,800	40,600	42,000
ARG WEIGHT SETTING	50,000	49,000	50,000		41,000	41,000	42,000	41,000	40,500	42,000
TYPE LANDING	TA	TA	TA		TA	TA	TA	TA	TA	TA
AMBIENT WIND	5	5	5		5	5	3	5	6	5
REL DIR (°)	060	310	310		180	320	200	180	000	320
TEMPERATURE (°F)	73					71			79	71
PRESSURE (IN. HG)	30.160				30.280	30.030	30.280	30.280	30.010	30.030
ENGAGING SPEED (KN)	122	127	128		97	111	112	121	134	134
OFF-CENTER DISTANCE (FT)	20.9	20.9	20.9		0	0	0	0	0	0
ENGINE WIRE PICKUP	94	91.8	94		91	97	90	92		95
RPM (Z)	100	98.3	99.9		96	99	95	101		101
MAX ARG AXIAL LOAD	164,824	176,856	175,816		93,992	120,648	119,739	127,919	147,724	156,920
AXIAL LOAD (LB)	1,690	1,837	1,184		3,612	2,146	2,221	2,104	1,943	1,702
TIME (SEC)	3.179	3.377	3.486		2,036	2,642	2,609	2,731	3,303	3,467
LOAD (G)	1,266	1,602	1,193		2,569	1,879	1,064	2,083	1,589	1,626
TIME (SEC)	103.786	105.098	105.577		56,371	67,464	66,014	73,541	NV	86,927
PORT (LB)	72,030	76,604	84,693		53,574	63,193	67,568	66,256	NV	85,668
STARBOARD (LB)	9223	9918	7703		5427	6860	6880	7434	8734	9093
CYLINDER PRESSURE (PSI)	179	179	178		177	178	178	179	181	178
RAM TRAVEL (IN.)	2.58	2.18	2.18		2.14	1.314	2.14	2.14	1.916	1.314
BATTERY POSITION (IN.)	10	11	12		13	12	12	11	12	12
DIST FROM TWO-BLOCK (KN)										
REMARKS:										

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	32131	82132 *	22135	22180*					
DATE	16 AUG 67	16 AUG 67	16 AUG 67	22 AUG 67					
TYPE	A-3A	→	→	→					
AIR-CRAFT	CONFIGURATION	CLEAN	→	→					
ARG WEIGHT SETTING	GROSS WEIGHT (LB)	41,600	41,300	40,600	41,500				
TYPE LANDING	ARG WEIGHT SETTING	41,500	41,500	41,500	41,500				
AMBIENT	TYPE LANDING	TA	TA	TA	TA				
CON-	VEL (KN)	3	3	5	5				
DITION	WIND REL DIR (°)	200	200	180	320				
	TEMPERATURE (° F)	-	-	-	71				
	PRESSURE (IN. HG)	30.280	30.280	30.280	30.030				
ENGAGING SPEED (KN)	ENGAGING SPEED (KN)	98	112	122	135				
OFF-CENTER DISTANCE (FT)	OFF-CENTER DISTANCE (FT)	20P	20P	20P	20P				
ENGINE WIRE PICKUP	ENGINE WIRE PICKUP	92	104	94	95				
RPM (%) MAX ARG AXIAL LOAD	RPM (%) MAX ARG AXIAL LOAD	101	102	100	102				
ARREST- AXIAL LOAD (LB)	ARREST- AXIAL LOAD (LB)	101,864	126,796	144,016	189,832				
ING HOOK TIME (SEC)	ING HOOK TIME (SEC)	2.564	2.174	2.009	1.668				
LONG. LOAD (G)	LONG. LOAD (G)	1.994	2.750	3.164	4.123				
DECEL TIME (SEC)	DECEL TIME (SEC)	2.417	2.278	2.119	1.687				
CABLE PORT (LB)	CABLE PORT (LB)	63,587	89,345	86,071	102,726				
TENSION STARBOARD (LB)	TENSION STARBOARD (LB)	46,169	57,423	66,856	75,497				
CYLINDER PRESSURE (PSI)	CYLINDER PRESSURE (PSI)	5880	7432	8442	9715				
RAM TRAVEL (IN.)	RAM TRAVEL (IN.)	178	179	180	181				
BATTERY POSITION (IN.)	BATTERY POSITION (IN.)	2 1/4	2 1/4	2	1 3/4				
DIST FROM TWO-BLOCK (KN)	DIST FROM TWO-BLOCK (KN)	12	11	10	9				
REMARKS:	REMARKS:								

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Shoe Dampers, ACTUAL Weight Setting

EVENT NO.	22054	22055	22089	22094	22093	22090	22091*	22092	22095*	22096*
DATE	8 AUG 67	8 AUG 67	14 AUG 67	14 AUG 67	14 AUG 67	14 AUG 67	14 AUG 67	14 AUG 67	14 AUG 67	14 AUG 67
AIR-CRAFT	A-3A									
TYPE										
CONFIGURATION	CLEAN									
GROSS WEIGHT (LB)	40,600	39,900	40,900	41,500	41,800	40,600	40,300	40,000	41,200	40,600
ARG WEIGHT SETTING	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND	5	5	4	5	4	0	3	1	5	6
REL DIR (°)	180	180	330	030	360	000	330	000	000	030
TEMPERATURE (° F)	—	—	68	75	75	68	68	68	75	75
PRESSURE (IN. HG)	—	—	30.090	30.090	30.090	30.090	30.090	30.090	30.090	30.090
ENGAGING SPEED (KN)	119	133	139	141	145	146	121	138	139	141
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	20P	20P	20P	20P
ENGINE WIRE PICKUP	95.8	93	93	100.7	93	97	97	99	98	93
RPM (%)	98.8	99	101	102.2	99	97	99	101	100	98
ARREST-ING HOOK	14,672	15,430	16,953	18,187	18,507	18,293	14,575	17,558	17,792	18,016
AXIAL LOAD (LB)	1,094	0.887	1.051	0.851	0.787	0.998	0.870	0.767	0.805	0.803
TIME (SEC)	3.234	NU	3.956	4.095	4.123	4.062	3.338	4.315	4.130	4.107
LOAD (G)	0.978	NU	1.056	0.860	0.997	0.679	0.858	0.777	0.801	0.798
TIME (SEC)	74.713	82.057	92.842	100.387	100.019	101.094	89.744	100.051	105.002	101.990
CABLE PORT (LB)	76,563	82,685	89,831	94,689	95,220	92,750	72,445	86,914	84,338	86,641
TENSION STARBOARD (LB)	8,124	9,171	9,670	10,479	10,409	10,681	8,066	9,610	9,768	9,751
CYLINDER PRESSURE (PSI)	175	129	177	178	178	177	176	177	178	178
RAM TRAVEL (IN.)	3	3	3 5/16	4	3	3	3	3	2 1/2	2 1/2
BATTERY POSITION (IN.)	17	13	12	11	11	12	13	12	11	11
DIST FROM TWO-BLOCK (KN)										
REMARKS:										

* Replaced aircraft arresting-hook bumper, PN 4545527-501

A-3A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, SINGLE Weight Setting

EVENT NO.	21541	21748	21750	21605	21958	21654	21606	21961	21655
DATE	7 JUN 67	23 JUN 67	23 JUN 67	8 JUN 67	24 JUN 67	13 JUN 67	8 JUN 67	25 JUN 67	13 JUN 67
AIR-CRAFT	A-4B	→	→	→	→	→	→	→	→
CONFIGURATION	300 GAL. & 4 AND 1000 TANKS	→	→	→	→	→	→	→	→
GROSS WEIGHT (LB)	13,400	14,000	13,200	14,200	14,300	13,800	14,000	13,500	13,200
ARG WEIGHT SETTING	13,500	14,000	13,200	14,000	14,500	14,000	14,000	13,500	13,500
TYPE LANDING	TA	FA	FA	TA	TA	FA	TA	TA	TA
AMBIENT WIND	5	5	4	5	3	10	5	3	6
REL DIR (°)	225	330	360	360	350	180	360	350	175
TEMPERATURE (° F)	79	50	50	74	76	—	74	76	—
PRESSURE (IN. HG)	30.040	—	—	30.030	29.840	—	30.030	29.840	—
ENGAGING SPEED (KN)	111	119	123	131	132	133	135	137	118
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	0	20P
ENGINE WIRE PICKUP	86	97	94	69	94	96	81	96	98.3
RPM (%)	93	98	97	72	95	99	83	100	99.7
MAX ARG AXIAL LOAD	55,075	57,313	60,628	68,473	68,734	70,090	72,941	72,458	70,570
AXIAL LOAD (LB)	0.319	0.312	0.303	0.287	0.287	0.283	0.285	0.278	0.220
TIME (SEC)	3.398	3.586	3.862	4.383	4.542	4.434	4.536	5.160	3.968
LOAD (G)	0.324	0.318	0.310	0.292	0.293	0.287	0.289	0.150	0.230
TIME (SEC)	58.311	54.199	56.124	63.327	57.122	70.273	68.360	60.399	62.126
PORT (LB)	48.218	50.877	50.641	60.747	60.306	53.850	60.419	66.581	45.135
STARBOARD (LB)	1777	2140	2419	2354	2474	2652	2500	2674	2245
TENSION	182	180	181	176	178	180	177	176	184
CYLINDER PRESSURE (PSI)	5.3/4	3.13/4	3.3/4	5.1/8	5.1/8	4.1/2	5.1/8	5.1/8	4.1/2
RAM TRAVEL (IN.)	4	14	13	19	8	15	18	12	—
BATTERY POSITION (IN.)	—	—	—	—	—	—	—	—	—
DIST FROM TWO-BLOCK (KN)	—	—	—	—	—	—	—	—	—
REMARKS:	—	—	—	—	—	—	—	—	—

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	21968	21969	21630	21628	21633	21635	21631	21634	21595
DATE	9 JUL 67	9 JUL 67	9 JUL 67	9 JUL 67	9 JUL 67	9 JUL 67	9 JUL 67	9 JUL 67	7 JUN 67
AIR-CRAFT	TYPE	A-4B	→	→	→	→	→	→	→
	CONFIGURATION	300 GAL 4 HAND WING TANKS	→	→	→	→	→	→	→
	GROSS WEIGHT (LB)	14,200	14,000	14,300	14,300	13,700	13,800	14,100	12,100
	ARG WEIGHT SETTING	14,000	14,000	14,500	14,500	13,500	14,000	14,000	12,000
AMBIENT CON-DITION	TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	RA
	WIND	4	4	5	0	5	5	5	5
	REL DIR (°)	280	280	315	0	315	315	315	270
	TEMPERATURE (° F)	81	81	77	84	84	77	84	81
ENGAGING SPEED (KN)	PRESSURE (IN. HG)	29.850	29.850	30.005	29.808	29.908	30.005	29.908	30.010
	OFF-CENTER DISTANCE (FT)	132	134	125	125	131	134	138	100
	ENGINE WIRE PICKUP	20 P	20 P	20 S	20 S	20 S	20 S	20 S	0
	RPM (%)	90	107	82	92	100	99.5	100	93
ARREST-ING HOOK	MAX ARG AXIAL LOAD	91	108	86	95	102	99.5	100	95
	AXIAL LOAD (LB)	73,157	76,183	67,074	66,314	75,207	76,896	77,336	46,734
	TIME (SEC)	0.180	0.205	0.207	0.353	0.208	0.200	0.351	0.339
	LOAD (G)	4,742	4,912	4,123	4,127	4,429	4,314	4,653	2,962
CABLE TENSION	TIME (SEC)	0.213	0.214	0.214	0.477	0.217	0.465	0.361	0.348
	PORT (LB)	52,420	60,644	52,564	51,281	66,680	55,911	57,467	50,659
	STARBOARD (LB)	69,539	74,478	57,991	57,957	59,494	54,950	57,681	44,468
	CYLINDER PRESSURE (PSI)	2819	2833	2318	2613	2539	2609	2829	1402
BATTERY POSITION (IN.)	RAM TRAVEL (IN.)	197	197	179	179	179	179	179	179
	BATTERY POSITION (IN.)	5	5	434	434	434	434	434	534
	DIST FROM TWO-BLOCK (KN)	10	10	8	8	8	8	8	12
	REMARKS:								

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	21594	21751	21592	21596	21609	21962	21963	21964	21624
DATE	7 JUN 67	28 JUN 67	7 JUN 67	7 JUN 67	8 JUN 67	25 JUL 67	25 JUL 67	25 JUL 67	8 JUN 67
AIR-CRAFT	A-4B								
TYPE	300 GAL. & AND WING TANKS								
CONFIGURATION									
GROSS WEIGHT (LB)	12,200	12,100	12,500	12,000	12,400	12,300	12,100		12,100
ARG WEIGHT SETTING	12,000	12,000	12,500	12,000	12,500	12,500	12,000	12,000	12,000
TYPE LANDING	TA	FA	FA	TA	FA	TA	TA	TA	TA
AMBIENT WIND	0	5	5	7	5	3	4	4	10
REL DIR (°)	0	330	270	270	0	350	350	350	270
TEMPERATURE (° F)	79	82	79	81	74	76	76	76	84
PRESSURE (IN. HG)	30.040		30.040	30.010	30.030	29.840	29.840	29.840	30.100
ENGAGING SPEED (KN)	113	119	124	129	130	139	142	143	116
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	0	20P
ENGINE WIRE PICKUP	86	97	102.8	96	73	85	93	90	86
RPM (%) MAX ARG AXIAL LOAD	87	90	100.8	96	76	87	94	93	92
ARREST-AXIAL LOAD (LB)	552.57	565.29	609.29	645.64	62.458	73.549	NV	72.013	54.961
ING HOOK TIME (SEC)	0.717	0.707	0.702	0.290	0.299	0.278	NV	0.279	0.383
LONG. LOAD (G)	3.680	4.085	3.763	4.248	4.330	5.809	NV	5.394	4.025
DECEL TIME (SEC)	0.322	0.314	0.307	0.283	0.301	0.148	NV	0.150	0.230
CABLE PORT (LB)	55505	55726	61386	72.572	45.374	65.890	NV	62.806	50.675
TENSION STARBOARD (LB)	44559	47782	52384	53.842	50.635	68.341	NV	64.080	41.946
CYLINDER PRESSURE (PSI)	1677	2075	2118	2219	1984	2586	NV	2604	1731
RAM TRAVEL (IN.)	177	182	178	177	176	176	177	177	176
BATTERY POSITION (IN.)	534	3.544	534	534	518	514	514	514	434
DIST FROM TWO-BLOCK (KN)	10	6	8	9		11	10	10	11
REMARKS:									

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	21622	21626	21966	21965	21970
DATE	8 JUN 67	8 JUN 67	25 JUL 67	25 JUL 67	25 JUL 67
AIR-CRAFT	A-4B	→	→	→	→
TYPE	300 GAL 4 AND 1016 TANKS	→	→	→	→
CONFIGURATION	→	→	→	→	→
GRCS WEIGHT (LB)	12,400	11,700	11,500	11,200	12,400
ARG WEIGHT SETTING	12,500	11,500	11,500	11,500	12,500
TYPE LANDING	TA	TA	TA	TA	TA
AMBIENT WIND	0	5	4	4	10
REL DIR (°)	0	315	350	350	300
TEMPERATURE (° F)	84	84	76	76	81
PRESSURE (IN. HG)	30.10	30.100	29.940	29.840	29.850
ENGAGING SPEED (KN)	118	127	136	142	142
OFF-CENTER DISTANCE (FT)	20.0	20.0	20.0	20.0	20.0
ENGINE WIRE PICKUP	87.4	86	88	87	103
RPM (%)	88.2	88.4	90	100	104
ARREST-AXIAL LOAD (LB)	87,119	88,016	71,075	80,963	82,631
ING HOOK TIME (SEC)	0.329	0.360	0.181	0.190	0.190
LONG. LOAD (G)	4.529	4.924	5.320	5.431	6.201
DECEL. TIME (SEC)	0.398	0.390	0.359	0.330	0.192
CABLE PORT (LB)	54,937	58,527	54,731	59,979	56,301
TENSION STARBOARD (LB)	46,442	49,597	64,794	63,257	61,924
CYLINDER PRESSURE (PSI)	1626	2036	2303	2773	2793
RAM TRAVEL (IN.)	176	198	177	178	172
BATTERY POSITION (IN.)	434	434	514	514	5
DIST FROM TWO-BLOCK (KN)	→	→	→	→	→
REMARKS:					

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Drivers, ACTUAL Weight Setting

EVENT NO.	22112	22119	22113	22124	22126	22137	22138	22114	22121
DATE	15 AUG 67	16 AUG 67	15 AUG 67	16 AUG 67	22 AUG 67	16 AUG 67	16 AUG 67	15 AUG 67	16 AUG 67
AIR-CRAFT	A-4B	500 GAL. & 400 GAL. WING TANKS							
TYPE									
CONFIGURATION									
GROSS WEIGHT (LB)	14,200	14,500	13,400	13,700	14,400	14,400	14,300	13,200	14,200
ARG WEIGHT SETTING	14,500	14,500	13,500	13,500	14,500	14,500	14,500	13,500	14,200
TYPE LANDING	RA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND VEL (KN)	0	0	0	0	5	5	5	0	0
REL DIR (°)	0	0	0	0	120	180	180	0	0
TEMPERATURE (° F)					87				
PRESSURE (IN. HG)	30.70	30.20	30.70	30.80	30.20	30.80	30.20	30.70	30.20
ENGAGING SPEED (KN)	96	131	165	122	127	127	121	95	18
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	20.8	20.8
ENGINE WIRE PICKUP	65	49	84	66	56	86	92	87	90.7
RPM (%) MAX ARG AXIAL LOAD	20	60	65	66	56	49	74	83	93.2
ARREST-AXIAL LOAD (LB)	51,104	51,302	66,357	74,907	71,235	72,650	72,309	46,387	44,025
ING HOOK TIME (SEC)	0.282	0.269	0.258	0.249	0.247	0.243	0.244	0.267	0.269
LONG. LOAD (G)	3.387	3.107	4.42	5.051	4.291	4.593	5.019	3.063	2.800
DECEL TIME (SEC)	0.290	0.274	0.266	0.247	0.242	0.243	0.244	0.412	0.409
CABLE PORT (LB)	40,726	53,285	64,946	66,634	72,932	74,309	69,442	42,124	54,312
TENSION STARBOARD (LB)	42,937	50,977	60,044	66,263	64,840	64,167	68,027	43,159	45,480
CYLINDER PRESSURE (PSI)	1466	1673	2058	2105	2123	2194	2131	1625	1738
RAM TRAVEL (IN.)	162	162	193	177	176	178	178	167	174
BATTERY POSITION (IN.)	2.04	2.46	2.42	2.42	1.914	2	2	2 1/2	2 1/2
DIST FROM TWO-BLOCK (KN)	37	37	16	12	14	12	12	20	15
REMARKS:									

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH-047 Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	22140	22139	22175	22178	22189	22190	22126	22171	22127	22128
DATE	16 AUG 67	16 AUG 67	22 AUG 67	22 AUG 67	22 AUG 67	22 AUG 67	16 AUG 67	22 AUG 67	16 AUG 67	16 AUG 67
AIR-CRAFT	A-4B									
CO-FIGURATION	300 GM 4 AND WING TRAIL									
GROSS WEIGHT (LB)	14,100	14,200	14,500	14,100	13,800	13,200	12,000	12,300	11,900	11,800
ARG WEIGHT SETTING	14,000	14,000	14,500	14,000	14,000	14,000	12,000	12,500	12,000	12,000
TYPE LANDING	TA	TA	RA	FA	TA	TA	TA	TA	TA	TA
AMBIENT	5	5	5	5	5	5	3	5	3	3
WIND	180	180	320	320	330	000	180	000	180	180
REL DIR (°)										
TEMPERATURE (° F)			69	71	75	75		75		
PRESSION (IN. HG)	30.220	30.220	30.020	30.030	30.030	30.030	30.240	30.030	30.280	30.280
ENGAGING SPEED (KN)	119	121	129	133	133	135	112	122	95	107
OFF-CENTER DISTANCE (FT)	208	208	208	202	208	208	0	0	208	208
ENGINE WIRE PICKUP	89.2	89.2	104	86	77	79	82	80	78.1	85
RPM (%)	91.7	91.3	107	73	80	83	84	86	81.9	86
ARREST-ING HOOK	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
AXIAL LOAD (LB)	0.350	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351
TIME (SEC)	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000
LOAD (G)	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351
TIME (SEC)	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000
PORT (LB)	73.540	73.540	73.540	73.540	73.540	73.540	73.540	73.540	73.540	73.540
STARBOARD (LB)	60.132	60.132	60.132	60.132	60.132	60.132	60.132	60.132	60.132	60.132
CYLINDER PRESSURE (PSI)	2874	3113	3202	3511	3084	3294	31	3512	1351	1327
RAM TRAVEL (IN.)	178	179	179	179	179	179	178	179	174	176
BATTERY POSITION (IN.)	2	3	1845	184	184	184	274	184	274	274
DIST FROM TWO-BLOCK (KN)	12	11	11	11	11	11	11	12	15	13
REMARKS:										

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	21971	21972	21973	21977	21979	21980	21978	21974	21975
DATE	25 JUL 67	25 JUL 67	25 JUL 67	25 JUL 67	25 JUL 67	25 JUL 67	25 JUL 67	25 JUL 67	25 JUL 67
AIR-CRAFT	A-4B								
TYPE	300 GAL E AND WING TANKS								
CONFIGURATION									
GROSS WEIGHT (LB)	12,300	12,800	12,000	12,500	12,200	12,000	12,400	12,000	11,900
ARG WEIGHT SETTING	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500	14,500
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND VEL (KN)	4	4	4	5	5	5	5	4	4
CON- REL DIR (°)	300	340	300	300	300	300	300	300	300
TEMPERATURE (° F)	81	81	81	84	84	84	84	81	81
PRESSION (IN. HG)	29.850	29.450	29.850	29.810	29.810	29.810	29.810	29.810	29.810
ENGAGING SPEED (KN)	96	117	120	123	136	138	140	94	109
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	20.8	20.8
ENGINE WIRE PICKUP	85	114	84	84	85	84	106	80	86
RPM (%) MAX ARG AXIAL LOAD	88	106	86	80	80	85	104	81	88
ARREST- AXIAL LOAD (LB)	79,400	85,197	84,885	80,870	66,870	75,063	74,244	72,472	53,432
ING HOOK TIME (SEC)	0.503	0.307	0.309	0.302	0.294	0.292	0.276	0.419	0.201
LONG. LOAD (G)	8.470	8.469	4.791	4.795	5.122	5.122	5.120	3.032	3.506
DECEL TIME (SEC)	0.108	0.107	0.107	0.112	0.114	0.105	0.106	0.409	0.207
CABLE PORT (LB)	41,165	42,154	42,572	57,405	47,122	41,817	44,340	36,603	45,622
TENSION STARBOARD (LB)	41,165	42,154	42,572	57,405	47,122	41,817	44,340	36,603	45,622
CYLINDER PRESSURE (PSI)	1406	1406	1406	1406	1406	1406	1406	1406	1406
RAM TRAVEL (IN.)	154	169	169	124	169	169	169	159	169
BATTERY POSITION (IN.)	5	5	5	5	5	5	5	5	5
DIST FROM TWO-BLOCK (KN)	2.8	1.8	1.8	—	—	—	—	2.8	1.8
REMARKS:									

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, SINGLE Weight Setting

EVENT NO.		21976	21982						
DATE		25 AUG 67	25 AUG 67						
TYPE		A-4B							
AIR-CRAFT		300 GAL							
CONFIGURATION		4 ANP							
		410% TANKS							
GROSS WEIGHT (LB)		11,200	11,200						
ARG WEIGHT SETTING		14,500	14,500						
TYPE LANDING		TH	TH						
AMBIENT		4	3						
WIND		REL DIR (°)	0						
CON-		TEMPERATURE (° F)	81	84					
DITION		PRESSURE (IN. HG)	29.80	29.80					
ENGAGING SPEED (KN)		125	135						
OFF-CENTER DISTANCE (FT)		200	200						
ENGINE WIRE PICKUP		97	85						
RPM (%) MAX ARG AXIAL LOAD		98	84						
ARREST-		AXIAL LOAD (LB)	60,803	74,469					
ING HOOK		TIME (SEC)	0.191	0.201					
LONG.		LOAD (G)	4.605	6.045					
DECEL		TIME (SEC)	0.195	0.208					
CABLE		PORT (LB)	53,896	54,431					
TENSION		STARBOARD (LB)	58,877	65,357					
CYLINDER PRESSURE (PSI)		2313	2422						
RAM TRAVEL (IN.)		174	174						
BATTERY POSITION (IN.)		5	43/4						
DIST FROM TWO-BLOCK (KN)									
REMARKS:									

A-4B Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, SINGLE Weight Setting

EVENT NO.	21852	21857	21854	21856	21872	21995	21873	23546	21874	21875
DATE	13 JUL 67	13 JUL 67	13 JUL 67	13 JUL 67	14 JUL 67	28 JUL 67	14 JUL 67	15 MAR 68	14 JUL 67	14 JUL 67
TYPE	F-4A									
AIR-CRAFT										
CONFIGURATION	WING-TANKS									
GROSS WEIGHT (LB)	33,000	31,900	33,700	32,000	32,700	32,600	32,500	31,200	32,300	32,100
ARG WEIGHT SETTING	33,000	32,000	33,000	32,000	32,000	33,000	32,500	30,500	32,500	32,000
TYPE LANDING	TA	TA	TA	KA	KA	PA	TA	TA	TA	TA
AMBIENT										
WIND	0	0	0	0	0	5	15	15	15	15
REL DIR (°)	0	0	0	0	270	200	270	270	270	270
TEMPERATURE (° F)	81	81	91	81	78	76	78	78	78	78
PRESSURE (IN. HG)	29.615	29.615	29.615	29.615	29.705	29.900	29.705	29.705	29.705	29.705
ENGAGING SPEED (KN)	100	110	124	129	131	133	134	135	136	105
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	0	0	200
ENGINE										
WIRE PICKUP	94	88	90	87	84	94	89	92	95	88
RPM (%) MAX ARG AXIAL LOAD	97	97	97	97	89	102	94	100	98	75
ARREST-ING HOOK										
AXIAL LOAD (LB)	78,306	85,129	104,080	104,201	109,205	116,114	117,860	122,252	121,235	135,241
TIME (SEC)	2.244	2.110	2.073	2.069	1.967	1.780	1.768	1.769	1.920	2.389
LOAD (G)	2.094	2.397	2.832	2.884	3.622	3.102	3.158	3.856	3.597	2.341
DECEL	2.454	2.318	2.338	2.228	0.912	1.070	2.126	1.964	1.957	2.571
CABLE										
PORT (LB)	46,003	48,265	58,658	58,874	60,930	66,961	67,251	66,096	67,725	65,894
TENSION	46,805	53,982	63,582	66,220	70,081	74,029	68,263	65,226	71,939	42,341
CYLINDER PRESSURE (PSI)	4576	4973	6161	6166	6402	6655	6991	7466	7322	5006
RAM TRAVEL (IN.)	182	179	180	180	178	—	182	183	182	181
BATTERY POSITION (IN.)	5 1/4	4 7/8	5 1/4	4 7/8	4 7/8	5	4 11/16	7 1/2	4 11/16	4 1/16
DIST FROM TWO-BLOCK (KN)	—	8	7	7	9	13	—	1	—	—
REMARKS:										

F-4A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	21876	24143	24140	24141	24142	21996	21999	21997	24136	23543
DATE	14 JUL 67	24 JUN 68	24 JUN 68	24 JUN 68	24 JUN 68	28 JUL 67	28 JUL 67	28 JUL 67	24 JUN 68	15 MAR 68
AIR-CRAFT	F-4A	4 AND WING TANKS	4 AND WING TANKS	4 AND WING TANKS	4 AND WING TANKS	WING TANKS	4 AND WING TANKS	4 AND WING TANKS	4 AND WING TANKS	WING TANKS
TYPE										
CONFIGURATION										
GROSS WEIGHT (LB)	71,800	71,500	72,600	72,300	72,000	72,400	71,800	72,200	73,000	71,400
ARG WEIGHT SETTING	72,000	72,000	72,500	72,500	72,500	72,500	72,000	72,000	72,000	71,000
TYPE LANDING	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
AMBIENT WIND	10	20	20	20	20	3	7	0	10	-
REL DIR (°)	250	240	240	240	240	240	250	0	15	-
TEMPERATURE (° F)	78	77	77	77	77	76	76	76	75	-
PRESSURE (IN. HG)	29.925	30.010	30.010	30.010	30.010	29.900	29.900	29.900	30.030	-
ENGAGING SPEED (KN)	115	117	126	126	128	127	132	135	136	137
OFF-CENTER DISTANCE (FT)	202	202	202	202	202	202	202	202	202	202
ENGINE WIRE PICKUP	87	84	93	80	80	703	100	91	89	90
RPM (%) MAX ARG AXIAL LOAD	95	95	95	96	97	110	106	106	94	95
ARREST-AXIAL LOAD (LB)	95,853	103,187	116,021	115,438	112,904	129,187	122,456	124,889	123,585	132,112
ING HOOK TIME (SEC)	3.256	2.496	1.942	2.044	1.988	1.984	1.925	2.002	1.932	1.801
LONG. LOAD (G)	3.593	3.790	3.463	3.127	3.057	3.535	3.425	3.551	3.383	4.254
DECEL TIME (SEC)	2.267	2.508	1.967	2.305	2.028	1.915	1.931	1.927	1.889	1.814
CABLE PORT (LB)	73,103	74,093	80,591	84,361	77,626	90,547	86,824	90,349	93,274	79,693
TENSION STARBOARD (LB)	47,279	49,393	56,432	55,816	56,945	61,422	61,890	61,890	58,379	62,308
CYLINDER PRESSURE (PSI)	5596	5714	6787	6676	6633	7629	7195	7226	7339	8035
RAM TRAVEL (IN.)	182	182	183	182	182	182	182	182	182	183
BATTERY POSITION (IN.)	4 1/16	-	-	-	-	5	5	5	5	7 1/2
DIST FROM TWO-BLOCK (KN)	-	5	4	5	4	-	-	-	5	1
REMARKS:										

F-4A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	92163	22162	22188	22171	22168	22183	22186	22187	23104	23107
DATE	21 AUG 67	21 AUG 67	22 AUG 67	21 AUG 67	21 AUG 67	22 AUG 67	22 AUG 67	22 AUG 67	9 JAN 68	9 JAN 68
AIR-CRAFT	F-4A									
TYPE	WING TANKS		CLEAN	WING TANKS		CLEAN			6 AND WING TANKS	
CONFIGURATION										
GROSS WEIGHT (LB)	33,000	33,100	31,600	31,800	32,700	32,800	32,000	31,800	31,400	30,600
ARG WEIGHT SETTING	33,000	33,000	31,500	32,000	33,000	33,000	32,000	32,000	31,500	30,500
TYPE LANDING	TA	82	TA	TA	82	TA	TA	TA	TA	TA
AMBIENT WIND	4	4	5	6	6	4	5	5		
REL DIR (°)	330	330	330	000	000	000	330	330		
TEMPERATURE (° F)	79	79	75	79	79	75	75	75		
PRESSURE (IN. HG)	30.010	30.010	30.030	30.010	30.010	30.030	30.030	30.030		
ENGAGING SPEED (KN)	95	108	114	120	123	127	127	127	128	131
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	0	0	0
ENGINE WIRE PICKUP	94	98	99	95	91	95	97	85	87	
RPM (%)	100	91	97	98	98	98	89	89	98	
MAX ARG AXIAL LOAD	73,482	86,425	94,138	102,221	107,193	111,217	126,585	106,165	114,536	120,091
ARREST-ING HOOK	2.120	0.648	2.220	1.831	1.796	1.999	1.991	0.233	0.636	1.867
LONG. DECEL	2.021	2.447	2.620	3.078	2.914	3.085	3.290	3.275	3.799	4.022
CABLE	2.718	0.656	0.260	1.996	1.584	1.928	0.242	0.239	1.598	1.996
TENSION	52,546	62,753	66,934	84,394	82,312	82,237	82,065	82,292	83,686	NV
CYLINDER PRESSURE (PSI)	51,366	59,759	63,285	77,736	77,367	78,585	80,651	80,100	78,018	83,606
RAM TRAVEL (IN.)	4310	4780	5374	6400	6151	6615	NV	6235	6434	7149
BATTERY POSITION (IN.)	177	178	178	178	178	178	178	177	179	180
DIST FROM TWO-BLOCK (KN)	2 1/4	2 1/6	1 3/4	1 7/8	1 7/8	1 3/4	1 3/4	1 3/4	5 1/2	5 1/2
REMARKS:	13	12	12	12	12	12	12	13	8	7

F-4A Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	23102	23105	23112	23173	23182	23184	23169
DATE	9 JAN 68	9 JAN 68	21 AUG 67	21 AUG 67	22 AUG 67	22 AUG 67	21 AUG 67
AIR-CRAFT	F-4A						
TYPE							
CONFIGURATION	4 AND WING TANKS	4 AND WING TANKS	WING TANKS		CLEAN		WING TANKS
GROSS WEIGHT (LB)	32,100	31,400	31,500	31,300	33,000	32,600	32,400
ARG WEIGHT SETTING	33,000	31,500	31,500	31,500	33,000	32,500	32,500
TYPE LANDING	TA	TA	TA	TA	TA	TA	TA
AMBIENT WIND REL DIR (°)			6	5	4	4	4
CON-DITION			000	000	000	000	000
TEMPERATURE (° F)			79	79	75	75	79
PRESSURE (IN. HG)			30.010	30.010	30.030	30.030	30.010
ENGAGING SPEED (KN)	132	119	119	121	123	124	132
OFF-CENTER DISTANCE (FT)	0	80.0	80.0	80.0	80.0	80.0	80.0
ENGINE WIRE PICKUP	96	97	94	96	93	95	98
RPM (%)	98	101	100	85	99	102	102
ARREST-ING HOOK	123.475	107.663	107.776	103.362	113.309	119.306	130.956
TIME (SEC)	1.547	0.853	0.821	0.903	1.727	1.750	1.952
LONG. LOAD (G)	4.235	3.663	3.001	3.073	3.067	3.357	3.656
DECEL	1.786	1.898	2.085	0.899	1.731	0.857	1.958
CABLE PORT (LB)	81.011	60.129	87.335	85.796	88.938	87.119	92.642
TENSION	83.718	49.479	61.251	69.324	63.891	69.697	81.627
CYLINDER PRESSURE (PSI)	7281	4979	6272	5544	6774	6960	7516
RAM TRAVEL (IN.)	179	179	179	178	178	178	178
BATTERY POSITION (IN.)	5'4	5'2	17A	19/4	134	134	17A
DIST FROM TWO-BLOCK (KN)	8	8	11	12	12	12	12
REMARKS:							

F-4A Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	23548	23555	23540	23556	23559	23543	23553	23542	23552	23547
DATE	15 MAR 68									
TYPE	F-4A									
AIR-CRAFT	WING TANKS									
CONFIGURATION										
GROSS WEIGHT (LB)	32,600	31,500	32,800	31,300	30,800	31,800	32,300	32,000	32,400	32,700
ARG WEIGHT SETTING	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000
TYPE LANDING	TA	68	79	79	79	79	79	79	79	79
AMBIENT										
WIND										
REL DIR (°)										
TEMPERATURE (° F)										
DITION										
PRESSURE (IN. HG)										
ENGAGING SPEED (KN)	112	126	127	130	132	110	119		120	123
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	20.9	20.9	20.9	20.9	20.9
ENGINE WIRE PICKUP	50	93	93	92	92	93	94	96	90	93
RPM (%) MAX ARG AXIAL LOAD	96	96	94	99	99	100	100	99	98	99
ARREST- ING HOOK	22,600	22,600	22,600	22,600	22,600	22,600	22,600	22,600	22,600	22,600
AXIAL LOAD (LB)	1,376	1,376	1,376	1,376	1,376	1,376	1,376	1,376	1,376	1,376
TIME (SEC)	2.534	3.233	3.233	3.233	3.233	3.233	3.233	3.233	3.233	3.233
LOAD (G)	1,006	1,006	1,006	1,006	1,006	1,006	1,006	1,006	1,006	1,006
TIME (SEC)	1.835	1.835	1.835	1.835	1.835	1.835	1.835	1.835	1.835	1.835
PORT (LB)	63,124	63,124	63,124	63,124	63,124	63,124	63,124	63,124	63,124	63,124
STARBOARD (LB)	63,124	63,124	63,124	63,124	63,124	63,124	63,124	63,124	63,124	63,124
CYLINDER PRESSURE (PSI)	5238	6,190	6,190	6,190	6,190	6,190	6,190	6,190	6,190	6,190
RAM TRAVEL (IN.)	178	178	178	178	178	178	178	178	178	178
BATTERY POSITION (IN.)	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2
DIST FROM TWO-BLOCK (KN)	7	7	8	8	7	8	6	7	7	7
REMARKS:										

F-4A Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, SINGLE Weight Setting

EVENT NO.	21644	21645	21666	21664	21661	21668	21665	21767	21768
DATE	12 JUN 67	12 JUN 67	14 JUN 67	14 JUN 67	14 JUN 67	14 JUN 67	14 JUN 67	26 JUN 67	26 JUN 67
AIR-CRAFT	F-8D								
TYPE									
CONFIGURATION	CLEAN								
GROSS WEIGHT (LB)	22,000	21,700	21,700	21,400	21,700	21,400	22,000	21,900	21,800
ARG WEIGHT SETTING	22,000	22,000	21,500	21,500	22,000	21,500	22,000	22,000	22,000
TYPE LANDING	TA	TA	TA	TA	RA	TA	TA	TA	TA
AMBIENT WIND VEL (KN)	5	4	5	2	4	4	4	5	5
CON- REL DIR (°)	315	315	170	160	135	180	180	180	180
DITION TEMPERATURE (° F)	—	—	64	64	—	64	64	75	75
PRESSURE (IN. HG)	—	—	30.080	30.080	—	30.080	30.080	30.008	30.008
ENGAGING SPEED (KN)	96	99	114	132	137	138	139	102	110
OFF-CENTER DISTANCE (FT)	0	0	0	0	0	0	0	20P	30P
ENGINE WIRE PICKUP	106	93	103	80	88	89	89	89	72
RPM (%) MAX ARG AXIAL LOAD	106	96	104	84	92	94	92	92	93
ARREST- AXIAL LOAD (LB)	48,424	53,520	66,639	78,998	87,335	94,382	87,670	52,456	60,261
ING HOOK TIME (SEC)	0.333	0.318	2.341	1.877	2.046	1.956	1.842	0.242	0.228
LONG. LOAD (G)	1.341	1.644	2.162	3.044	3.046	3.490	3.441	2.142	2.386
DECEL. TIME (SEC)	0.332	0.326	0.316	0.308	0.305	0.295	0.299	0.250	2.313
CABLE PORT (LB)	47,479	53,776	57,503	66,055	69,374	72,812	74,037	49,081	55,085
TENSION STARBOARD (LB)	40,398	46,981	50,995	59,714	61,876	61,106	63,834	41,012	42,765
CYLINDER PRESSURE (PSI)	2344	2651	3681	4372	4947	5380	4889	2583	3263
RAM TRAVEL (IN.)	176	180	179	179	181	180	180	178	178
BATTERY POSITION (IN.)	5 1/2	5 1/2	4 3/4	4 3/4	—	4 3/4	4 3/4	3 1/4	3 1/4
DIST FROM TWO-BLOCK (KN)	—	—	—	—	—	—	—	—	—
REMARKS:									

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear W/TH Shesve Dampers, ACTUAL Weight Setting

EVENT NO.	21769	21956	23256	21881	23255	232546	21778	23257	232544	23253
DATE	26 JAN 67	24 MAR 67	7 FEB 68	14 JUL 67	7 FEB 68	23 OCT 67	27 JAN 67	7 FEB 68	23 OCT 67	7 FEB 68
TYPE	F-8D									
AIR-CRAFT	CLEAN									
CONFIGURATION										
GROSS WEIGHT (LB)	21,700	23,000	21,900	21,500	22,000	21,800	21,700	21,800	22,000	21,500
ARG WEIGHT SETTING	21,500	22,000	22,000	21,500	22,000	22,000	22,000	22,000	22,000	21,500
TYPE LANDING	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB
AMBIENT WIND VEL (KN)	5	4		10						
REL DIR (°)	120	320		270						
TEMPERATURE (° F)	75	89		78						
PRESSURE (IN. HG)	30.008	29.930		29.905						
ENGAGING SPEED (KN)	126	135	136	140	142	143	143	144	147	145
OFF-CENTER DISTANCE (FT)	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.5
ENGINE WIRE PICKUP	99	91	100	93	98	88		79	91	96
RPM (%) MAX ARG AXIAL LOAD	99	101	100	78	99	90		100	90	100
ARREST-ING HOOK	75.067	90.464	77.760	90.363	84.719	86.433		83.823	92.372	61.916
TIME (SEC)	2.160	1.943	0.337	1.343	0.189	1.804		0.329	1.804	0.370
LOAD (G)	3.100	2.990	3.160	3.269	3.211	3.794		3.286	4.084	2.363
TIME (SEC)	2.183	0.173	1.921	0.353	1.827	1.956		1.923	1.865	2.338
CABLE PORT (LB)	57.020	56.180	58.473	63.514	66.476	67.511		60.670	71.133	46.326
TENSION STARBOARD (LB)	53.651	67.592	57.942	69.869	60.191	63.871		67.014	65.391	47.744
CYLINDER PRESSURE (PSI)	4169	4984	5725	5284	5117	5394		5469	6183	3808
RAM TRAVEL (IN.)	178	180	181	183	181	179		182	179	182
BATTERY POSITION (IN.)	3 13/16	5 1/4	3	4 7/16	3	5 7/8		3	5 7/8	3
DIST FROM TWO-BLOCK (KN)		6				7			7	
REMARKS:										

* The aircraft arresting-hook became disengaged from the crossdeck pendant during the arrestment.

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.		23250	23252	23251					
DATE		7 FEB 68	7 FEB 68	7 FEB 68					
TYPE		F-8D							
AIR-CRAFT									
CONFIGURATION		CLEAN							
GROSS WEIGHT (LB)		22,000	21,700	21,900					
ARG WEIGHT SETTING		22,000	22,000	22,000					
TYPE LANDING		HA	TA	TA					
AMBIENT WIND		VEL (KN)							
CON-		REL DIR (°)							
DITION		TEMPERATURE (° F)							
		PRESSURE (IN. HG)							
ENGAGING SPEED (KN)		135	140	147					
OFF-CENTER DISTANCE (FT)		205	205	205					
ENGINE WIRE PICKUP		94	100	101					
RPM (%)		98	100	103					
ARREST-		AXIAL LOAD (LB)	77,952	78,207	77,153				
ING HOOK		TIME (SEC)	0.188	0.349	0.668				
LONG.		LOAD (G)	3.080	3.264	3.740				
DECEL.		TIME (SEC)	2.044	1.920	1.937				
CABLE		PORT (LB)	59,646	57,629	64,865				
TENSION		STARBOARD (LB)	57,196	59,245	60,744				
CYLINDER PRESSURE (PSI)		4980	4996	5845					
RAM TRAVEL (IN.)		183	183	134					
BATTERY POSITION (IN.)		3	3	3					
DIST FROM TWO-BLOCK (KN)		6	6	5					
REMARKS:									

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	23079	23086	23088	23096	23099	23097	23099*	23101*
DATE	8 JAN 68	8 JAN 68	8 JAN 68	9 JAN 68	8 JAN 68	9 JAN 68	9 JAN 68	9 JAN 68
TYPE	F-8D							
AIR-CRAFT								
CONFIGURATION	CLEAN							
GROSS WEIGHT (LB)	22,000	21,900	21,700	22,000	21,500	21,900	21,400	22,000
ARG WEIGHT SETTING	22,000	22,000	22,000	22,000	21,500	22,000	21,500	22,000
TYPE LANDING	TA	TA	FA	FA	TA	FA	FA	FA
AMBIENT WIND								
REL DIR (°)								
CON- DITION								
TEMPERATURE (° F)								
PRESSURE (IN. HG)								
ENGAGING SPEED (KN)	114	124	129	138	110	140	140	140
OFF-CENTER DISTANCE (FT)	0	0	0	0	20P	20P	20P	20P
ENGINE WIRE PICKUP	92	82	89	84	89	92	92	92
RPM (%)	94	95	90	92	99	99	99	96
MAX ARG AXIAL LOAD	46,206	72,001	86,972	98,078	63,907	78,305	101,058	
ARREST- ING HOOK	0.253	0.231	0.223	0.206	0.972	0.954	0.823	
TIME (SEC)	2.278	2.881	2.990	3.431	2.210	2.904	3.894	
LOAD (G)	0.263	0.270	0.274	0.223	0.979	2.128	0.891	
TIME (SEC)	6.157	74.423	83.018	NV	73.653	82.121	NV	
CABLE								
PORT (LB)	60,861	71,297	80,684	92,767	54,787	64,661	78,861	
TENSION	3511	4688	4786	5589	3938	4283	5731	
CYLINDER PRESSURE (PSI)	179	180	179	180	180	180	180	
RAM TRAVEL (IN.)	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	
BATTERY POSITION (IN.)	8	7	8	7	7	7	7	
DIST FROM TWO-BLOCK (KN)								
REMARKS:								

* The aircraft arresting-hook became disengaged from the crossdeck pendant during the arrestment.

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	23109*	23100*	23108*	23110
DATE	9 JAN 68	9 JAN 68	9 JAN 68	9 JAN 68
AIR-CRAFT	F-8D			
TYPE	CLEAN			
CONFIGURATION				
GROSS WEIGHT (LB)	21,600	21,300	21,900	21,100
ARG WEIGHT SETTING	21,500	21,500	22,000	21,000
TYPE LANDING	FA	FA	FA	FA
AMBIENT WIND				
CON-REL DIR (°)				
DITION TEMPERATURE (° F)				
PRESSURE (IN. HG)				
ENGAGING SPEED (KN)	140	141	144	135
OFF-CENTER DISTANCE (FT)	20P	20P	20P	20S
ENGINE WIRE PICKUP				94
RPM (%) MAX ARG AXIAL LOAD				98
ARREST-AXIAL LOAD (LB)				91,848
ING HOOK TIME (SEC)				0.298
LONG. LOAD (G)				3.245
DECEL. TIME (SEC)				0.302
CABLE PORT (LB)				83,538
TENSION STARBOARD (LB)				86,251
CYLINDER PRESSURE (PSI)				5073
RAM TRAVEL (IN.)				181
BATTERY POSITION (IN.)				5 1/2
DIST FROM TWO-BLOCK (KN)				6
REMARKS:				

* The aircraft arresting-hook became disengaged from the crossdeck pendant during the arrestment.

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear WITH-OUT Sheave Dampers, ACTUAL Weight Setting

EVENT NO.	22007	22008	22043	23260	22045	23261	22010	22009	22047
DATE	1 AUG 67	1 AUG 67	8 AUG 67	7 FEB 68	8 AUG 67	7 FEB 68	1 AUG 67	1 AUG 67	23 OCT 67
TYPE	F-8D	→	→	→	→	→	→	→	→
AIR-CRAFT	CLEAN	→	→	→	→	→	→	→	→
GROSS WEIGHT (LB)	21700	21800	21600	21300	21000	21200	21500	21600	21700
ARG WEIGHT SETTING	25000	25000	25000	25000	25000	25000	25000	25000	25000
TYPE LANDING	RA	RA	FA	FA	FA	FA	FA	FA	FA
AMBIENT	6	0	4	-	4	-	0	0	-
WIND	030	000	210	-	210	-	0	0	-
REL DIR (°)	80	80	-	-	-	-	80	80	-
TEMPERATURE (° F)	-	-	30.008	-	30.008	-	-	-	-
PRESSURE (IN. HG)	115	129	140	142	143	144	122	123	127
ENGAGING SPEED (KN)	0	0	0	0	0	0	200	200	200
OFF-CENTER DISTANCE (FT)	86	93	97.3	96	91	97	99	100	94
ENGINE WIRE PICKUP	88	96	101	97	96	100	100	100	98
RPM (%) MAX ARG AXIAL LOAD	61.536	72.166	83.754	85.764	86.642	86.722	69.597	69.802	76.781
ARREST-AXIAL LOAD (LB)	0.311	0.310	0.285	0.257	0.245	0.223	1.063	1.061	1.007
ING HOOK TIME (SEC)	2.613	3.020	3.637	3.209	3.405	3.472	2.726	2.851	3.054
LONG. LOAD (G)	0.322	0.317	0.294	0.295	0.270	0.483	1.073	1.067	1.529
DECEL TIME (SEC)	57.497	NV	68.433	62.900	62.455	65.714	NV	NV	56.427
CABLE PORT (LB)	52.702	57.836	NV	67.462	72.268	65.734	53.237	53.539	53.201
TENSION STARBOARD (LB)	3095	NV	4603	4807	4404	4922	NV	NV	4118
CYLINDER PRESSURE (PSI)	176	126	179	179	179	178	173	173	176
RAM TRAVEL (IN.)	4 1/16	4 1/16	4 1/4	3	4 1/4	3	4 1/16	4 1/16	5 3/8
BATTERY POSITION (IN.)	-	-	-	-	-	-	-	-	-
DIST FROM TWO-BLOCK (KN)	-	-	-	-	-	-	-	-	-
REMARKS:									

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear WITH SINGLE Weight Setting

EVENT NO.	22079	22046	23265	22048	23262	23263
DATE	8 AUG 67	8 AUG 67	7 FEB 68	8 AUG 67	7 FEB 68	7 FEB 68
TYPE	F-8D	—	—	—	—	—
AIR-CRAFT	CLEAN	—	—	—	—	—
GROSS WEIGHT (LB)	21,800	20,600	20,500	19,900	21,000	20,800
ARG WEIGHT SETTING	25,000	25,000	25,000	25,000	25,000	25,000
TYPE LANDING	FA	FA	FA	FA	FA	FA
AMBIENT WIND	5	4	—	4	—	—
REL DIR (°)	120	210	—	210	—	—
TEMPERATURE (° F)	90	—	—	—	—	—
PRESSURE (IN. HG)	30.000	30.000	—	30.000	—	—
ENGAGING SPEED (KN)	130	136	138	139	141	141
OFF-CENTER DISTANCE (FT)	20 P	20 P	20 P	20 P	20 P	20 P
ENGINE WIRE PICKUP	—	91.5	95	87	100	101
RPM (%) MAX ARG AXIAL LOAD	—	94.5	96	89	101	101
ARREST-ING HOOK	77.273	NV	76.478	84.854	83.763	85.690
TIME (SEC)	1.618	NV	0.204	0.187	0.711	0.698
LOAD (G)	3.036	2.987	3.083	3.770	3.330	3.409
TIME (SEC)	0.401	0.346	1.926	0.194	0.718	0.702
CABLE PORT (LB)	56.383	72.157	57.501	72.057	61.251	60.356
TENSION STARBOARD (LB)	62.201	62.637	60.721	61.912	62.084	64.576
CYLINDER PRESSURE (PSI)	4307	4363	4795	4201	4842	4910
RAM TRAVEL (IN.)	173	179	—	179	179	179
BATTERY POSITION (IN.)	3 1/2	4 1/4	3	4 1/4	3	3
DIST FROM TWO-BLOCK (KN)	16	—	—	—	—	—
REMARKS:						

♦ Nose-Gear Steering Stud, PN 548527-1, failed.

F-8D Aircraft, Mark 7 Mod 3 Arresting Gear WITH Sheave Dampers, SINGLE Weight Setting

Event No.	24114	24131	24134	24132	24133	24135	24117	24137	24115	24136	24138
1968 Date	6/20	2/61				6/20	6/20	6/21	6/20	6/21	
Type	F-4A										
Aircraft Configuration	Ctr-line & Wing Tanks										
Gross Weight (Lb)	32,500	33,000	31,500	32,400	32,000	30,900	31,000	32,500	32,000	33,000	31,800
ARG Weight Setting (Lb)	32,500	33,000	31,500	32,500	32,000	31,000	31,000	32,500	32,000	33,000	32,000
Type Landing	Fly-in										
Ambient Condition	Wind Velocity (Kn)	10	8				14	10			
	Rel Dir (Deg)	15									
	Temperature (° F)	70	74				73	75	70	75	
	Pressure (In. HG)	29.825	29.925				29.805	30.030	29.825	30.030	
Engaging Speed (Kn)	127	-	126	-	-	128	118	134	119	136	130
OFF-CENTER Distance (Ft)	0		10 P	0		10 P	0			20 P	10 P
Engine Wire Pickup	-	85	86	85	88	86	-	87	-	89	87
RFM(%) Max ARG Axial Load	-	94	95	93	95	94	-	94	-	94	94
Glide Slope (Deg)	3										
Arresting-Hook Touchdown Pt Before Deck Pendant (Ft)	80	75		60			25		10		5 or less
*Stabilator Position at Wire Pickup (%)	100		98	99	100		32	98	99	97	60

* Percent travel from full nose down position

† Crossdeck pendant impacted leading edge of port stabilator

‡ Crossdeck pendant impacted leading edge of port and starboard stabilators

APPENDIX C - TABULATED DATA FOR F-4A AIRCRAFT FLY-IN ARRESTMENTS

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

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13. ABSTRACT Presents results of tests conducted with the Mark 7 Mod 3 arresting gear to determine aircraft compatibility and evaluate arresting-gear performance. Instrumented A-3A, A-4B, F-4A, and F-8D aircraft were utilized in the test program. Test data was obtained for use in the preparation of aircraft recovery bulletins for the USS JOHN F. KENNEDY (CVA67) and to insure compatibility of current fleet aircraft with the Mark 7 Mod 3 arresting gear. Testing was conducted with three basic arresting-gear configurations/operating modes: (1) arresting gear with sheave dampers, using actual weight settings; (2) arresting gear without sheave dampers, using actual weight settings; and (3) arresting gear with sheave dampers, using single weight settings. Compatibility with A-3A and A-4B aircraft and qualified compatibility with F-4A and F-8D aircraft has been established.			

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
ARRESTING GEAR (AIRCRAFT, RECOVERY)						
NAVAL AIRCRAFT						
JET BOMBERS						
ATTACK BOMBERS						
JET FIGHTERS						
PERFORMANCE (ENGINEERING)						
COMPATIBILITY TESTS						

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