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MEASUREMENTS OF BLAST PRESSURES ON A RIGID 65 DEGREE SWEEPBACK --ETC(U)
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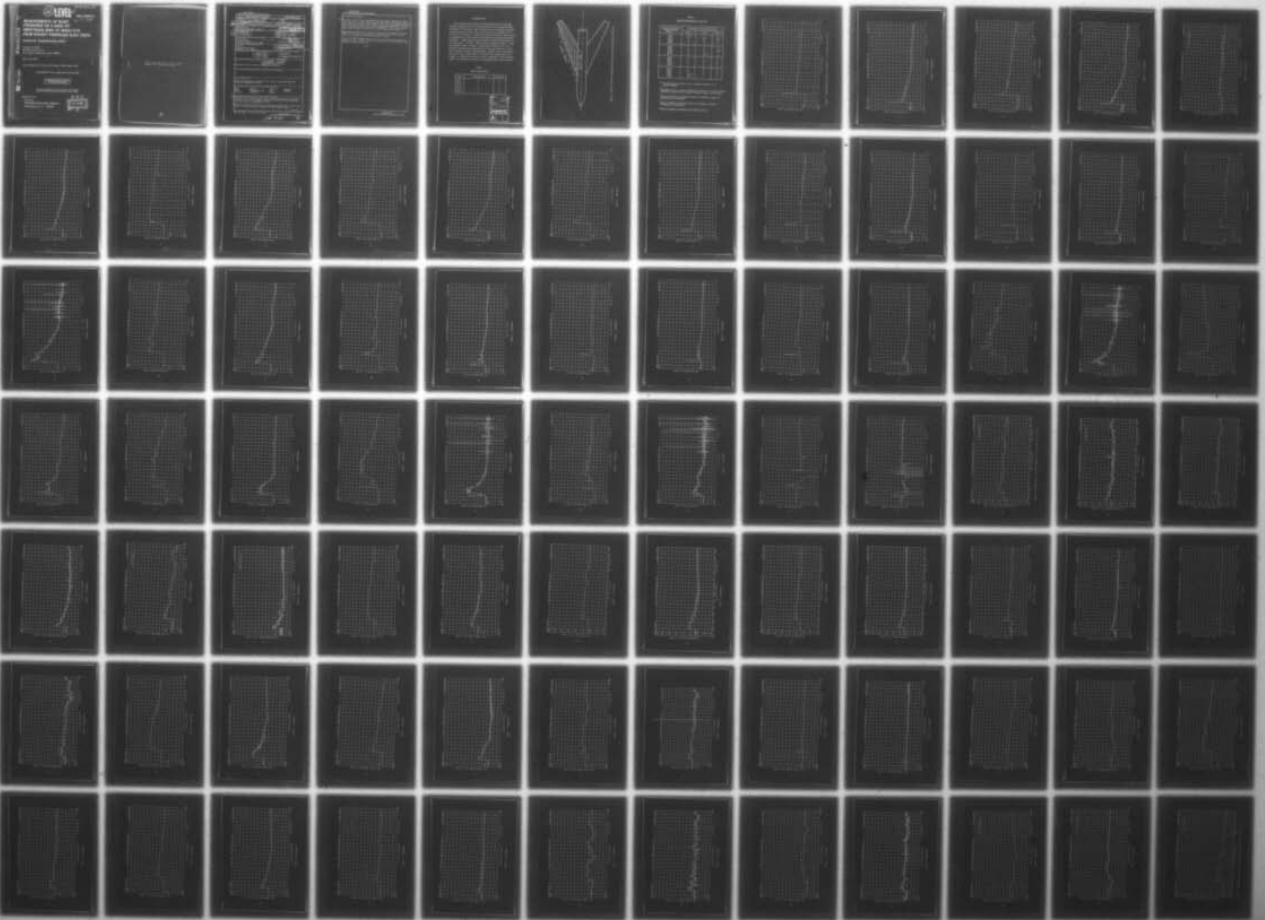
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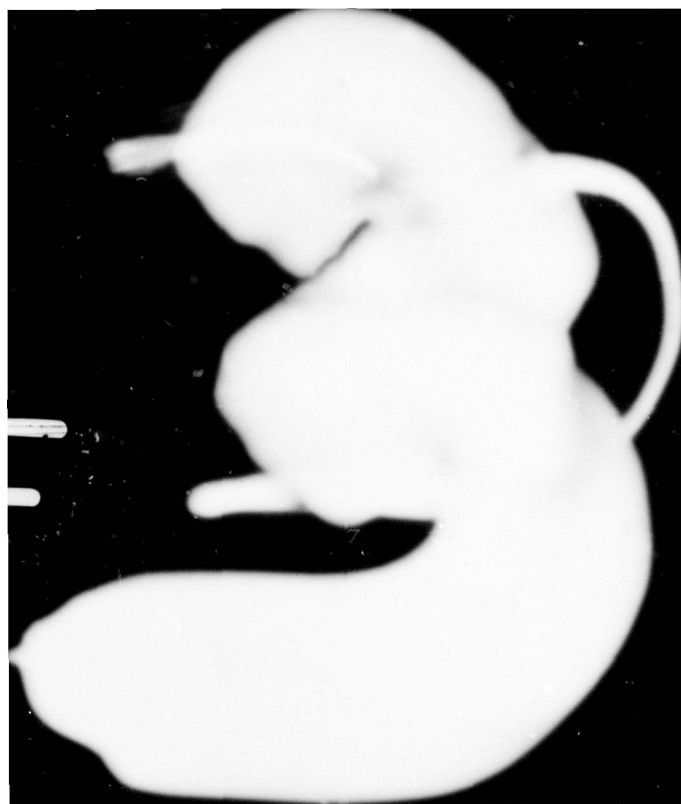
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MEASUREMENTS OF BLAST PRESSURES ON A RIGID 65° SWEPTBACK WING AT MACH 0.76 FROM ROCKET PROPELLED SLED TESTS

Volume II—Supplementary Data

Kaman AviDyne
83 Second Avenue
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20 June 1977

Final Report for Period October 1975—May 1977

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Blast	Pressure	Aircraft	Sweptback
Shock	Experimental Test	Wing	Subsonic
Sled Test	Explosives	Vortex	
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Interaction of a blast wave with a highly sweptback wing model was measured in a series of three sled tests, performed on the 50,788-foot track at Holloman Air Force Base in July and August of 1976. The sled, traveling at Mach 0.76, was intercepted progressively by blast waves produced from the sequential detonation of three charges of TNT. (over)			

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20. ABSTRACT (Continued)

The model consisted of a sting-mounted wing and fuselage combination. Wing properties were: 46.80-in. span, 18.95-in. mean chord, 2.47 aspect ratio, 0.29 taper ratio, 67 deg. leading edge sweepback, 64.8 deg. quarter-chord sweepback, and a 64A012 wing section. Blast induced loadings were measured at 20 locations on the wing for blast intercept overpressures of about 2 and 4 psi for blast intercept angles of about 20, 90, and 135 degrees from head-on.

A preliminary analysis of the test data indicates the existence of some non-linear blast-induced loads on the model appreciably greater than would be expected on the basis of linearized aerodynamic theory.

Volume 1 of this report describes the tests, and presents and discusses the reduced test data. Volume 2 presents a complete set of the wing pressure time histories in working size plots.

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INTRODUCTION

This volume presents large size supplementary plots of the wing pressure transducer test data obtained during the sled tests described in Volume 1 of this report, most of which data are presented in greatly reduced size for one time scale in the first parts of Figures 17, 21, 25, 29 and 33 of Volume 1. These data consist of plots of time histories of pressures on the test wing for the various test conditions described in Volume 1. These pressure time histories are generally presented for two time-scales. An index of these figures is given as Table 1. Reference should be made to Volume 1, particularly Sections 2 to 4, for a detailed explanation and identification of all test conditions, transducer locations, and data interpretation. However, for the convenience of users of this volume, Figure 1 and Table 2 are repeated here from Volume I to indicate the locations of all transducers in the wing model. Table 2 also indicates the types of measurements made at each location.

TABLE I
INDEX OF TEST DATA

Run	Intercept No.	Figure No.
9B-A1	2	2
9B-A2	1	3
9B-A2	2	4
9B-A2	3	5
9B-A3	1	6

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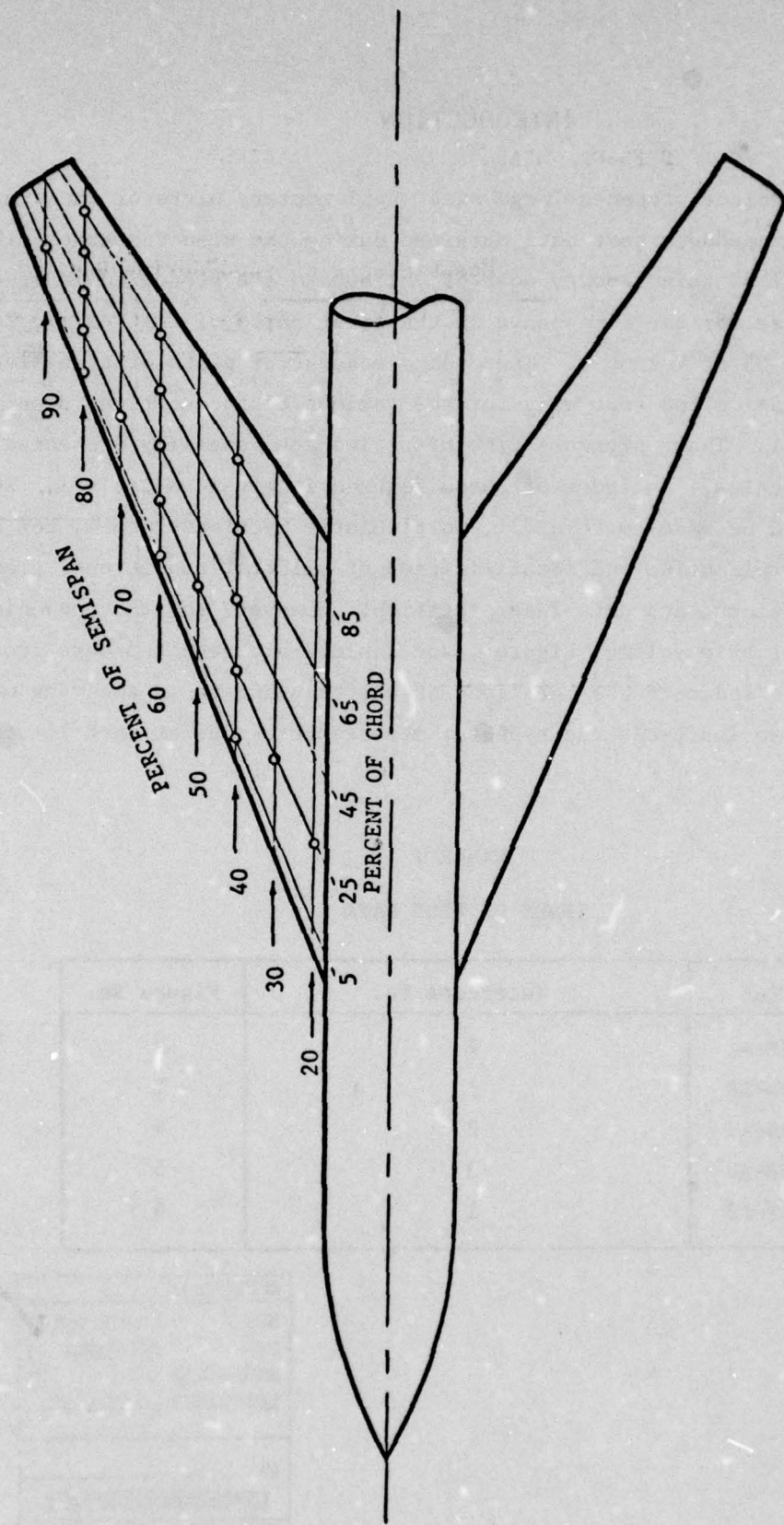


Figure 1. Sketch of Wing and Fuselage Model Showing Pressure Measurement Stations

TABLE 2
PRESSURE MEASUREMENTS ON THE WING

Transducer location, %semispan/%chord (Fig. 1)	Measurement recorded ^a during Run:		
	9B-A1	9B-A2	9B-A3
20/25	D, B, L	L	D
30/25	D	D, B, L	D, B, L
40/05	D	D	D
40/25	D	D	D
40/45	D	D	D
40/65	D	D	D
40/85	D	D	D, ^{b, e}
50/25	D	D	B ^{b, e}
60/05	D	D	D
60/25	D	D? ^{b, d}	D
60/45	D	D	D
60/65	D	D	D
60/85	D	D	D
70/25	D	D	D
80/05	D	D	D
80/25	D	D	D
80/45	D	D	D
80/65	D	D	D
80/85	D? ^{b, c}	D	D
90/25	D? ^{b, c}	L	D

^aD for differential pressure, B for blastward pressure, L for leeward pressure.

^bTransducer set up to measure differential pressure, but would indicate blastward pressure only if leeward transducer fails, or vice versa.

^cBlastward transducer inoperative after run completion; operative during pre-run calibration.

^dLeeward transducer inoperative after run completion; operative during pre-run calibration.

^eLeeward transducer inoperative just before sled run.

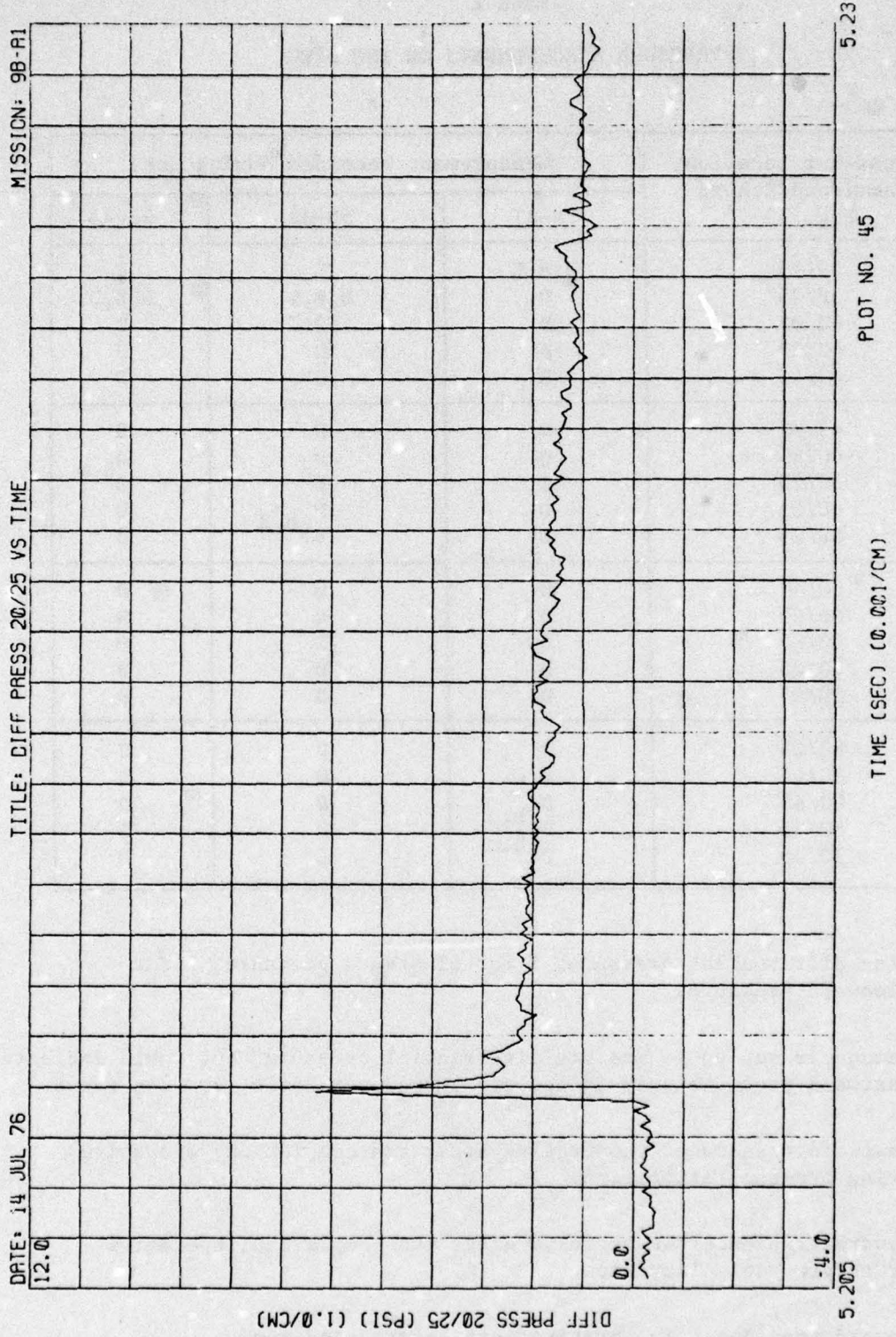


Figure 2. Wing Pressures, Run 9B-A1, Intercept 2, $\phi = 87.6$ deg., $\Delta p_s = 2.1$ psi.

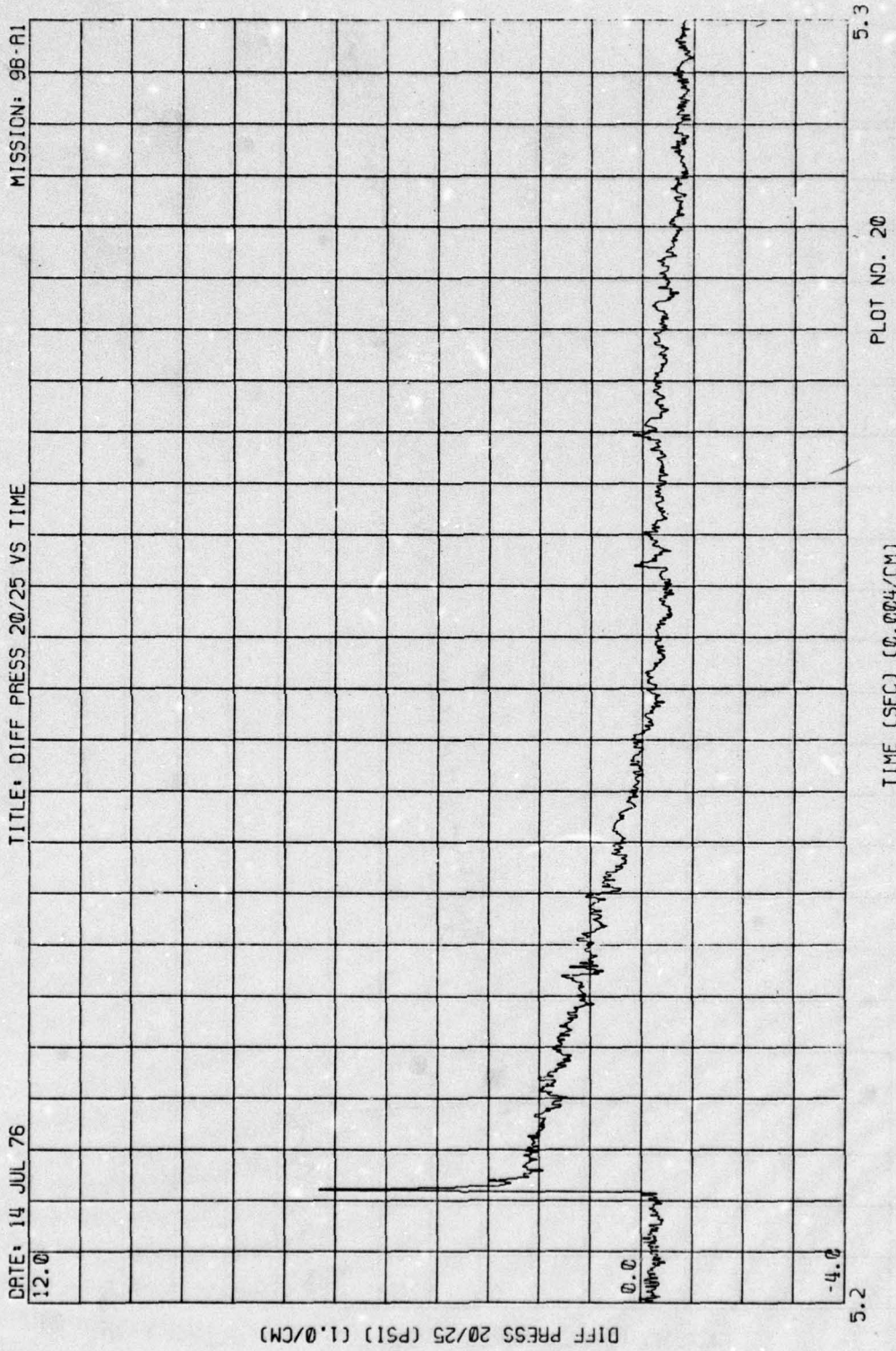


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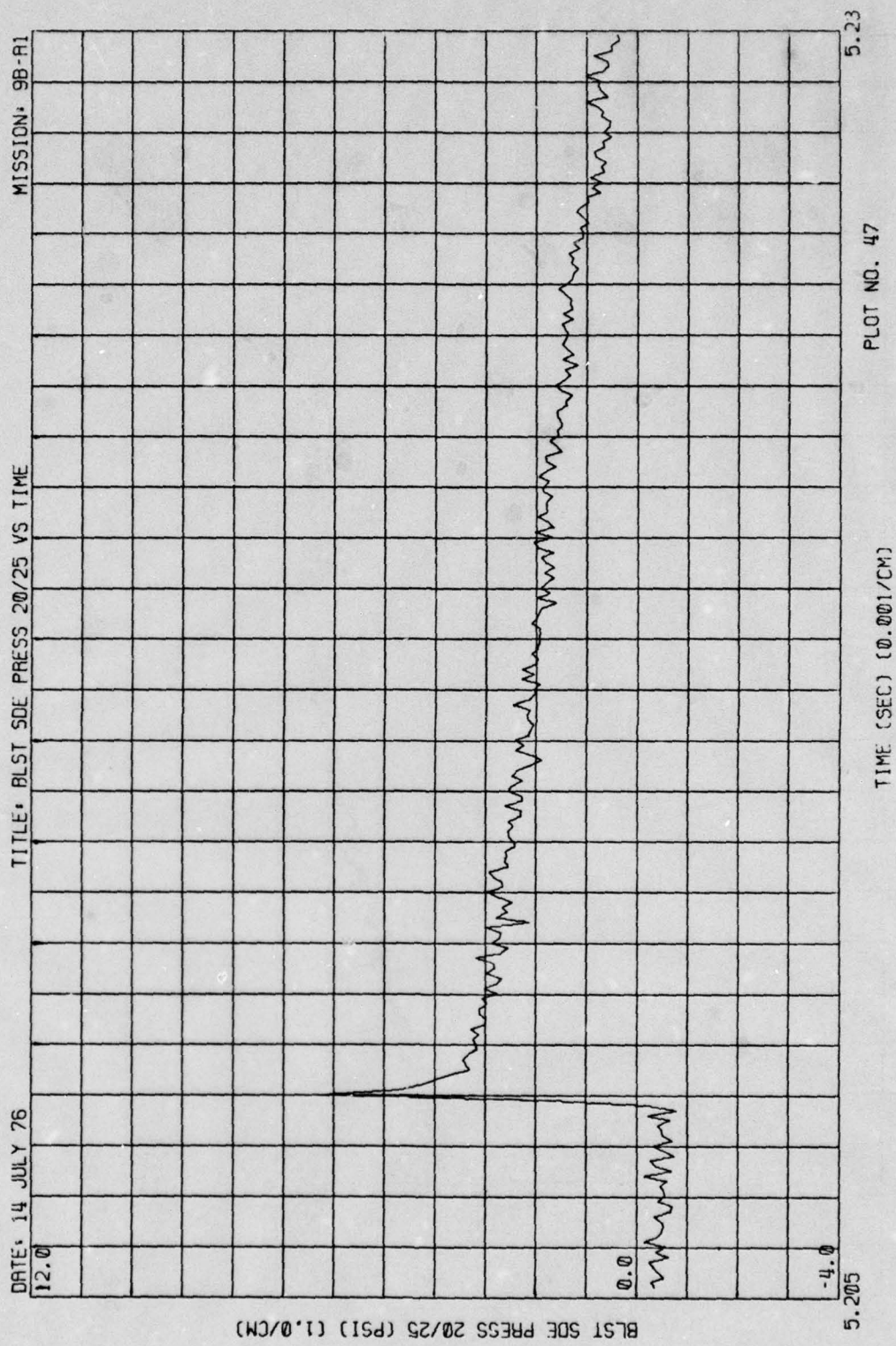


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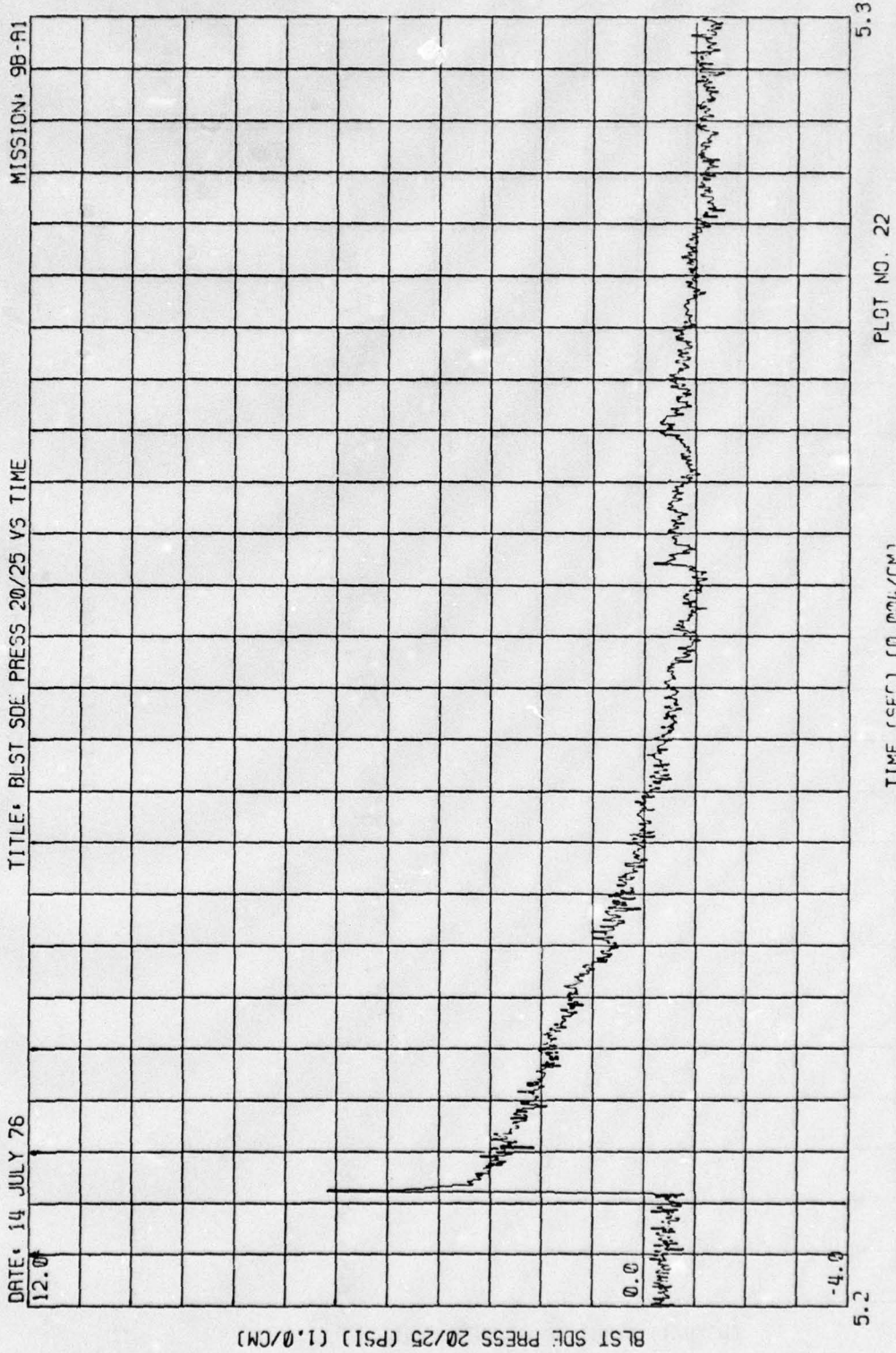


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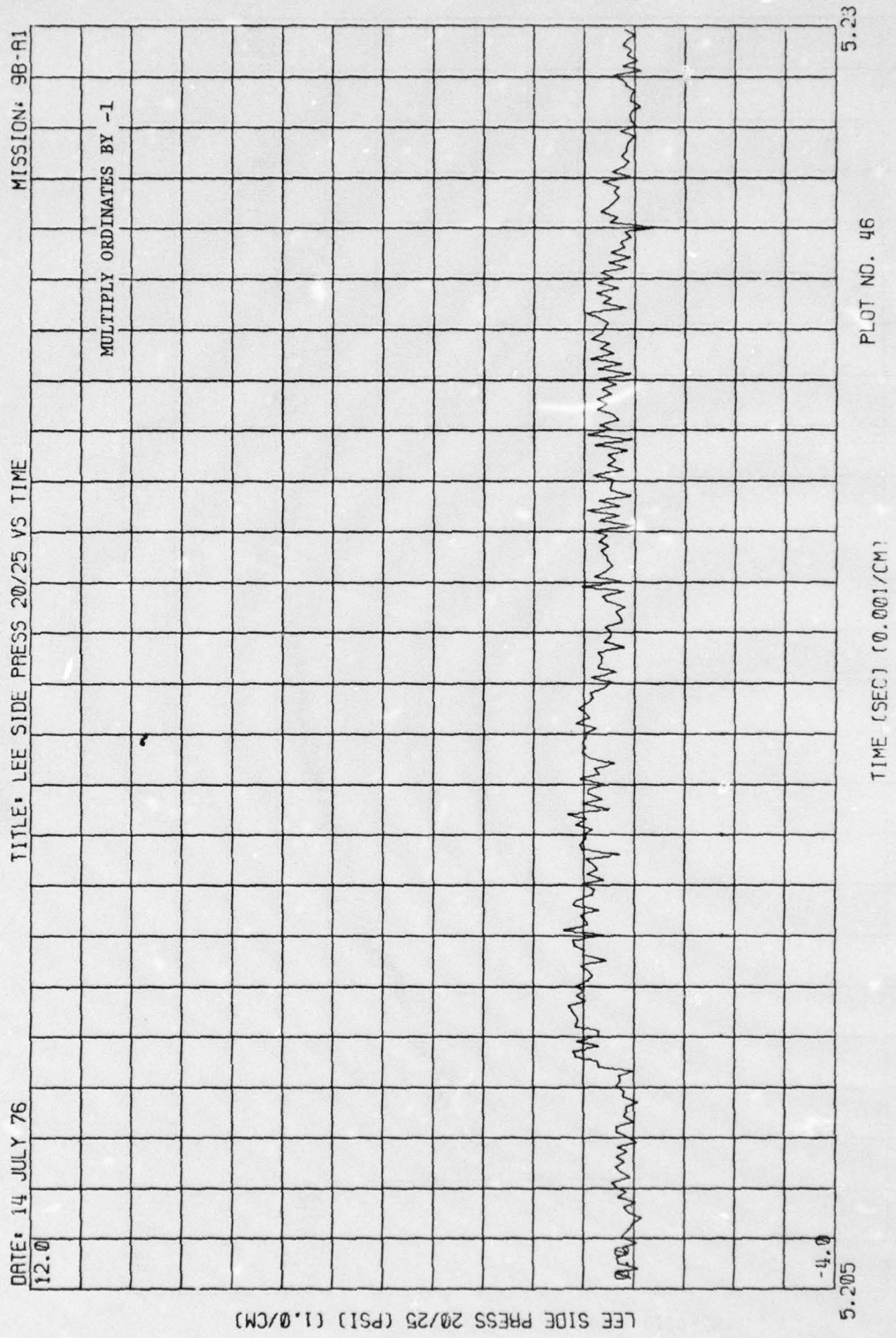


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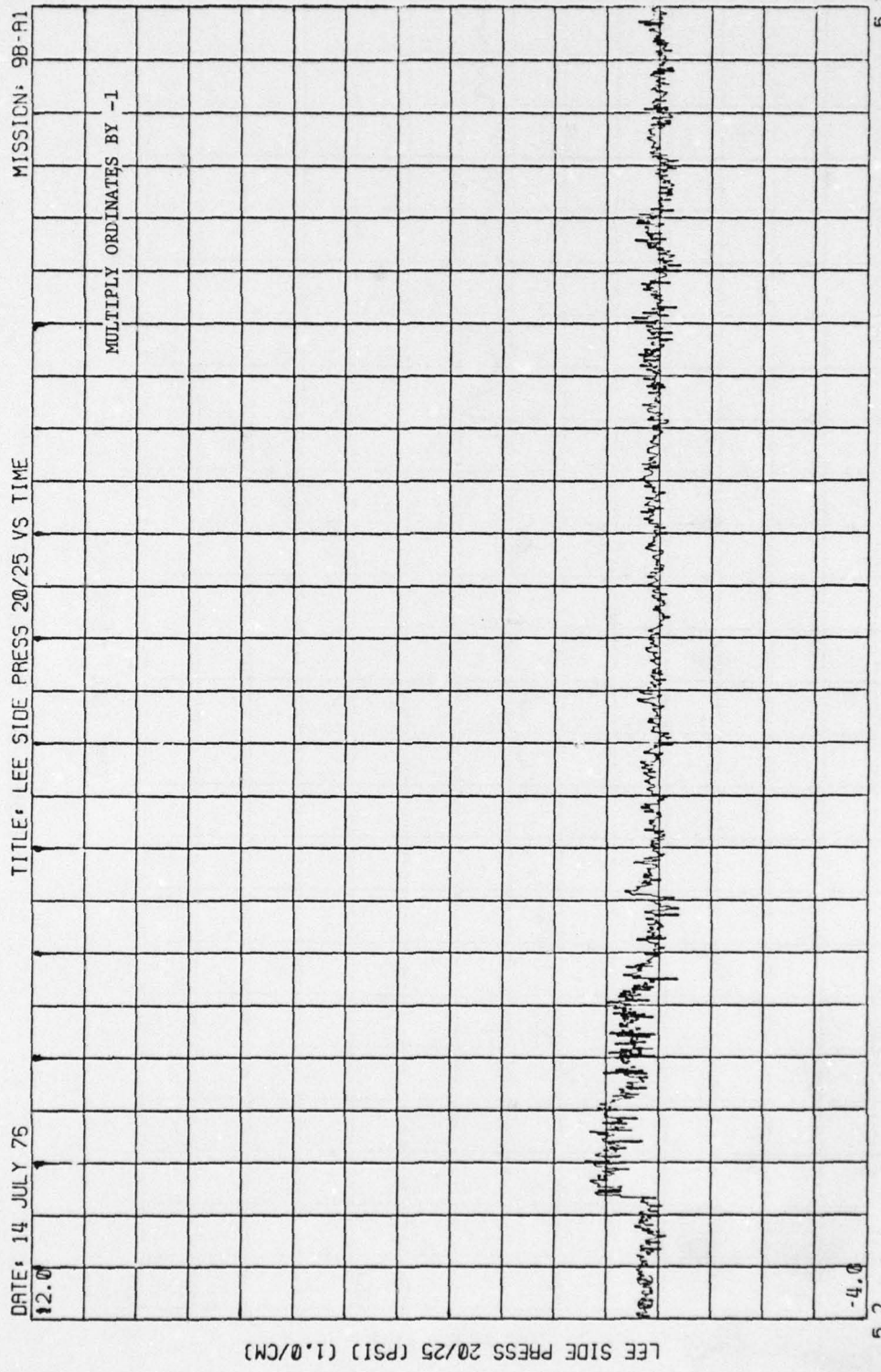


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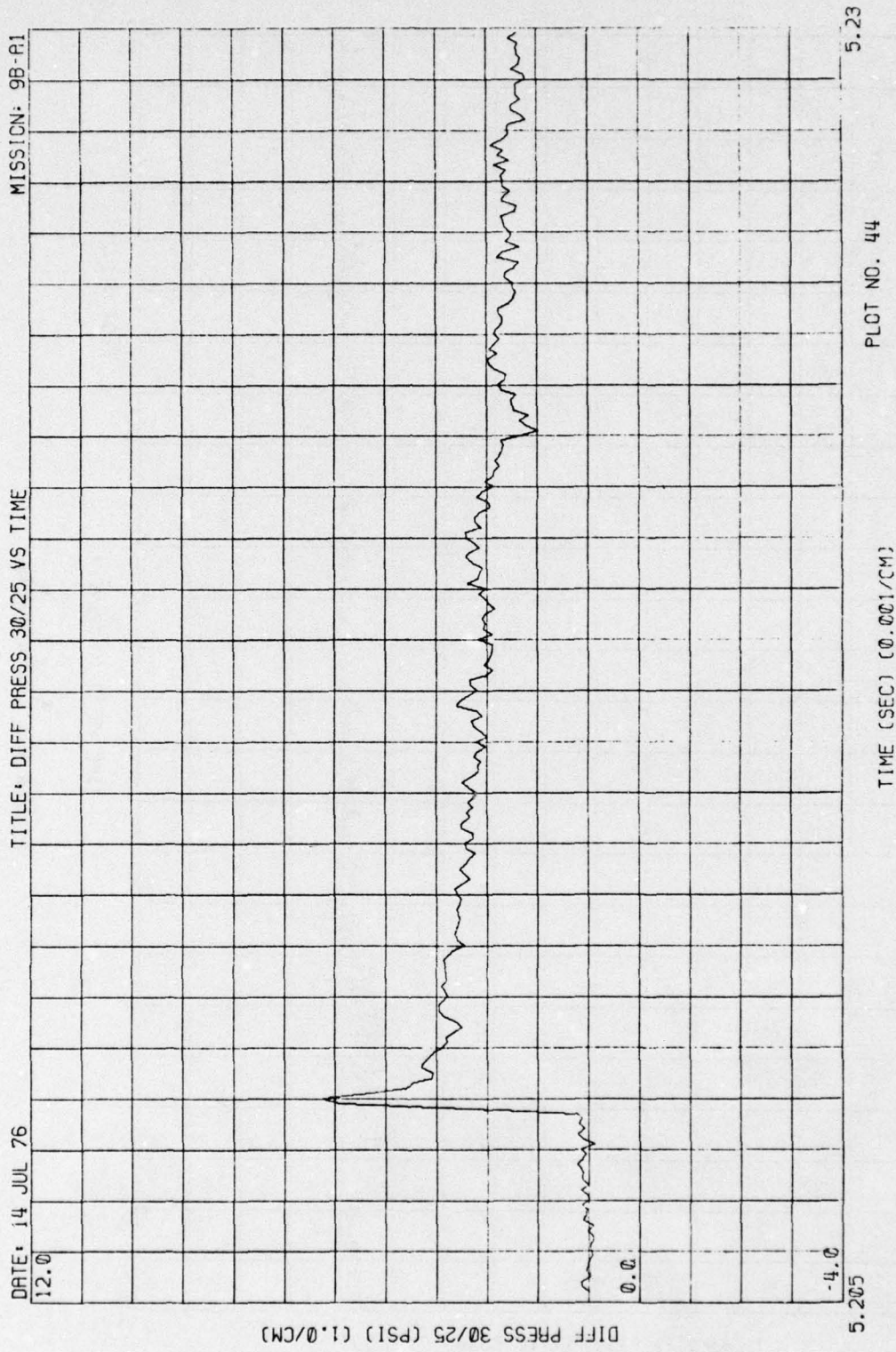


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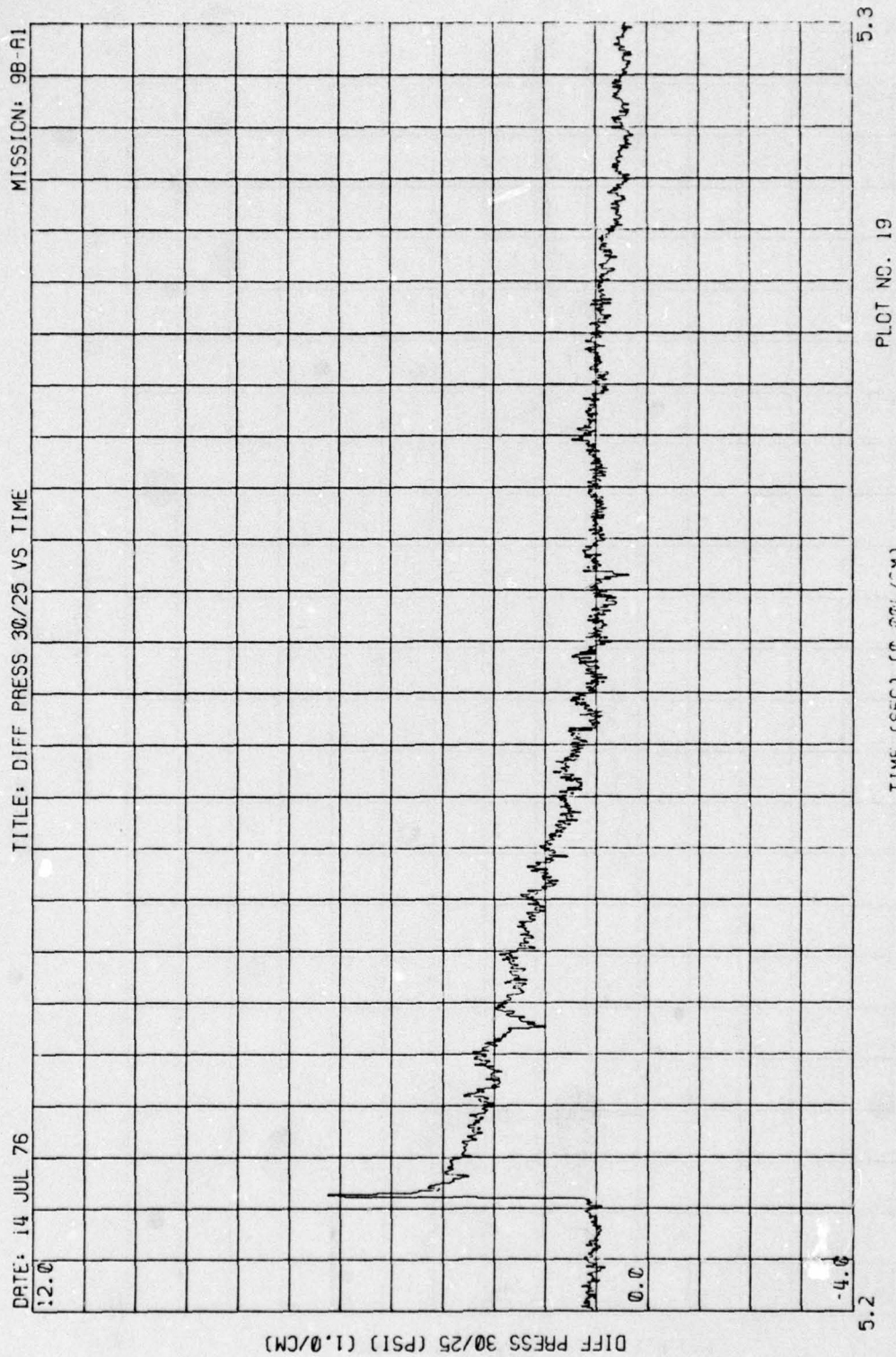


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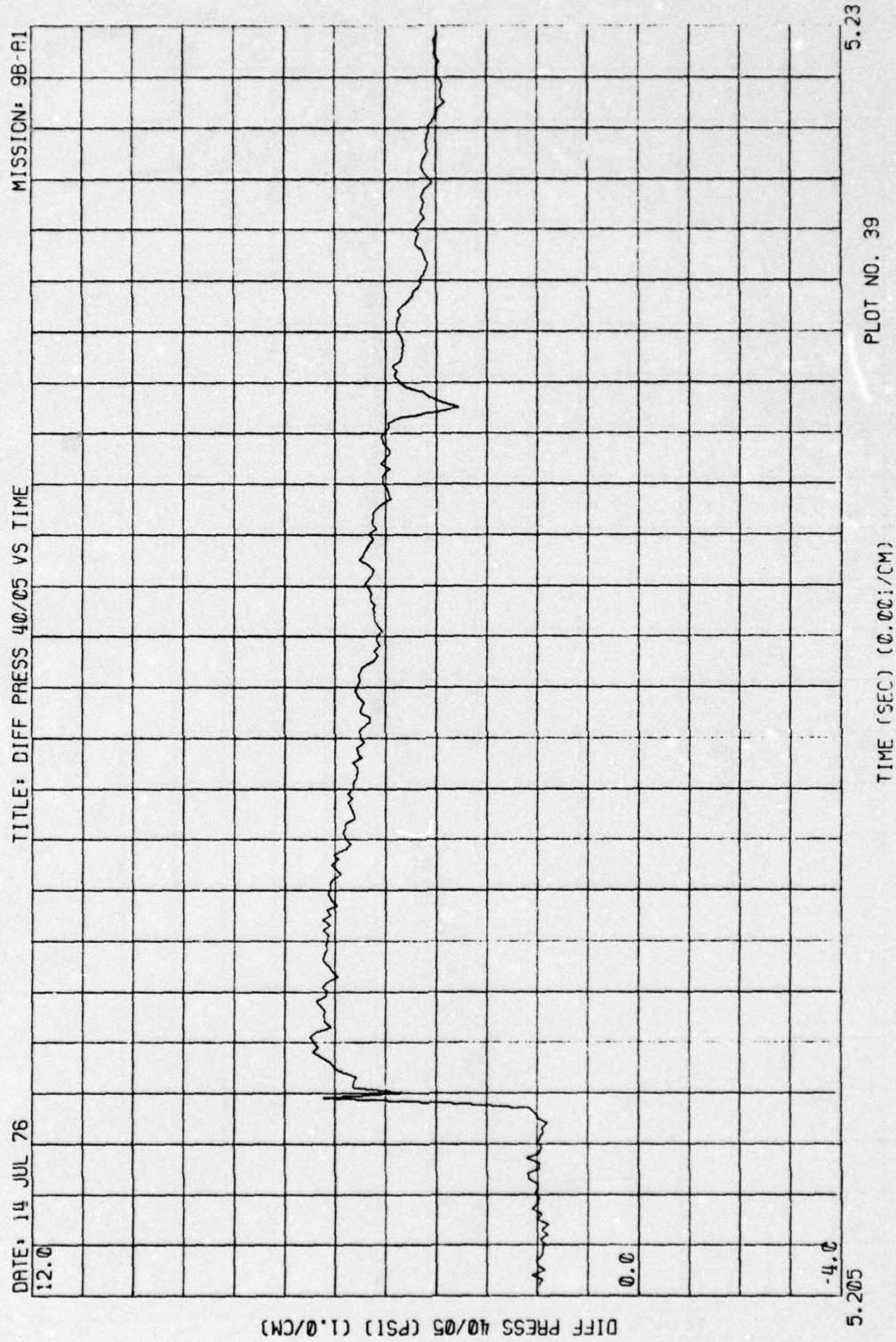


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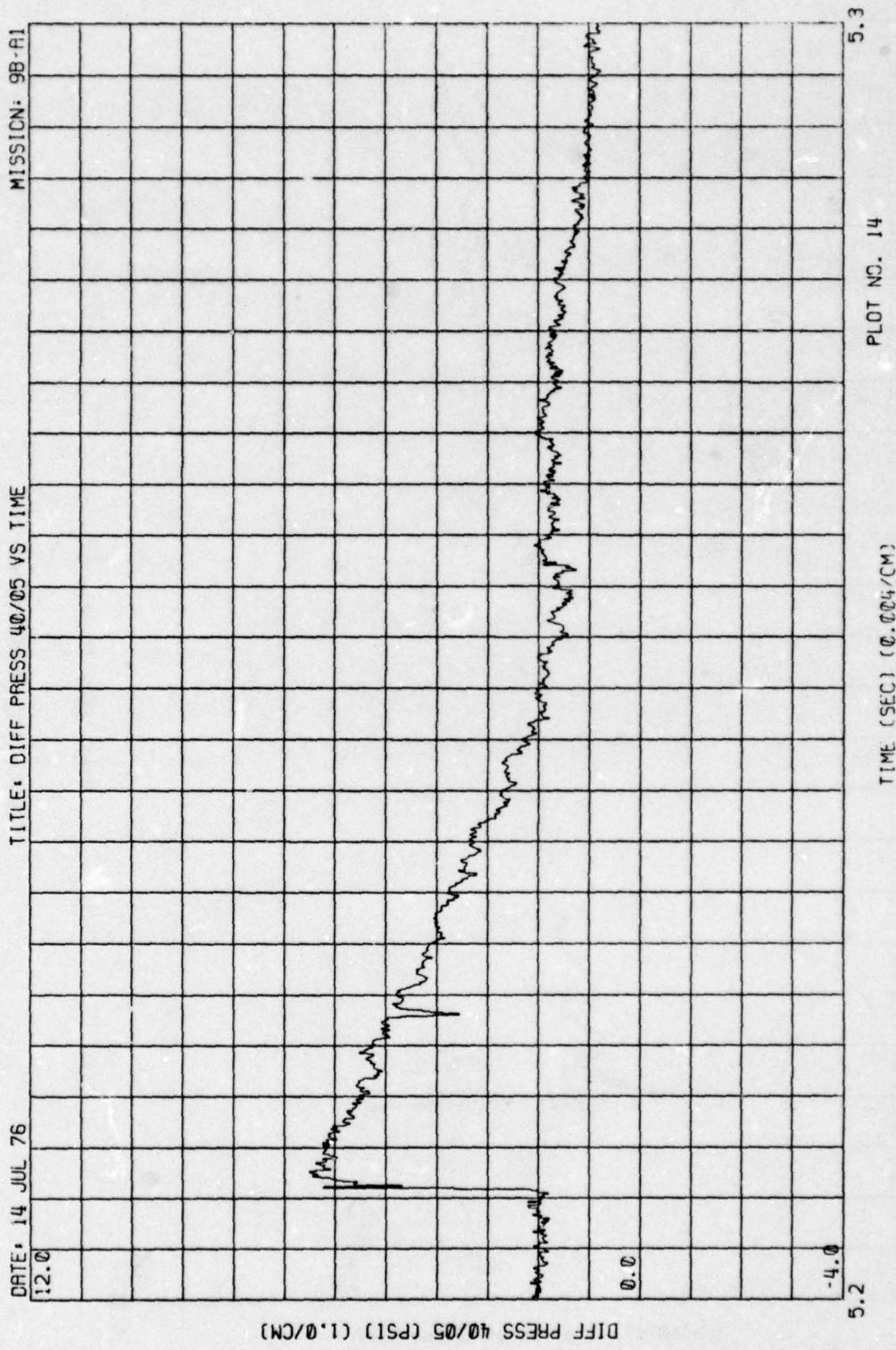


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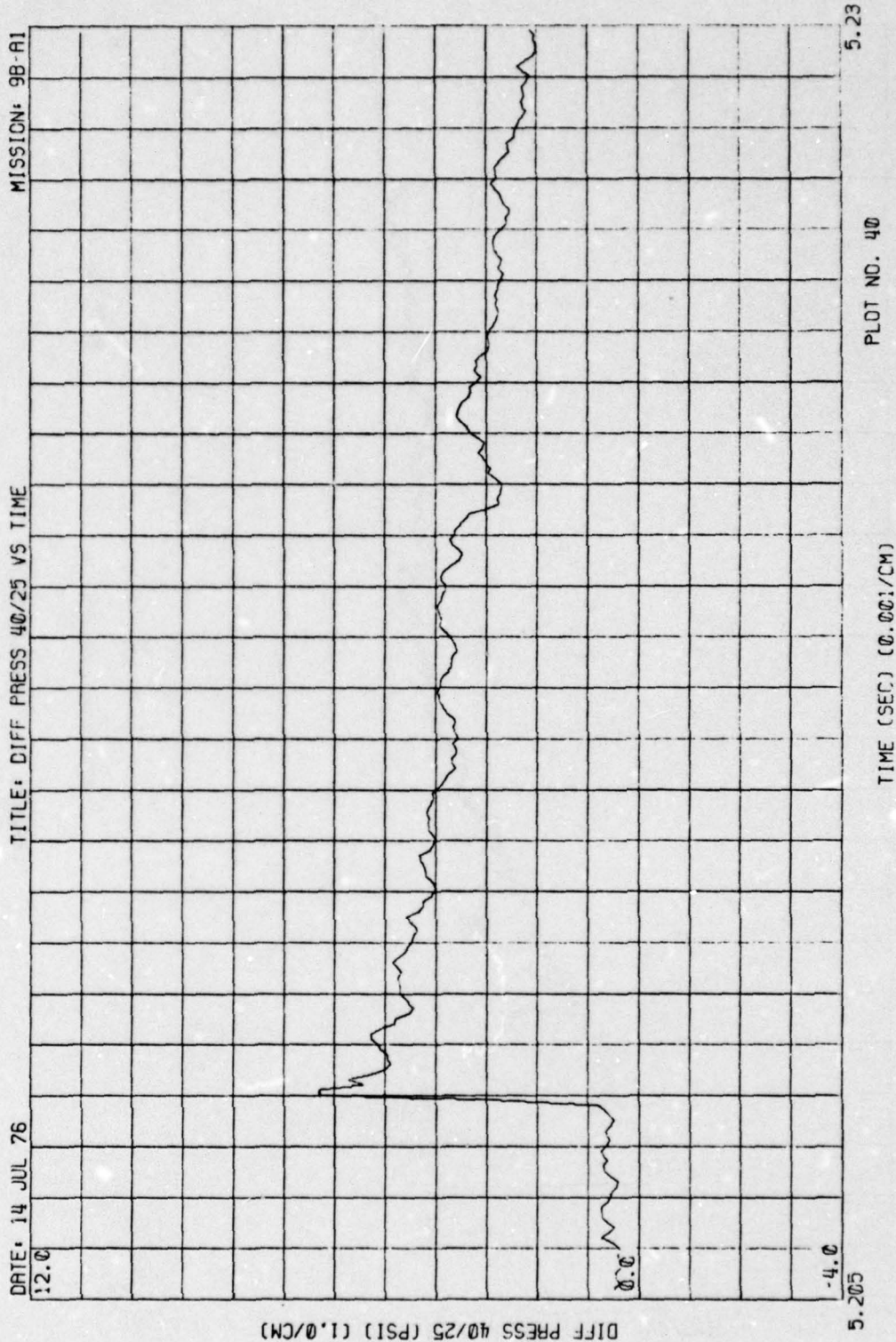


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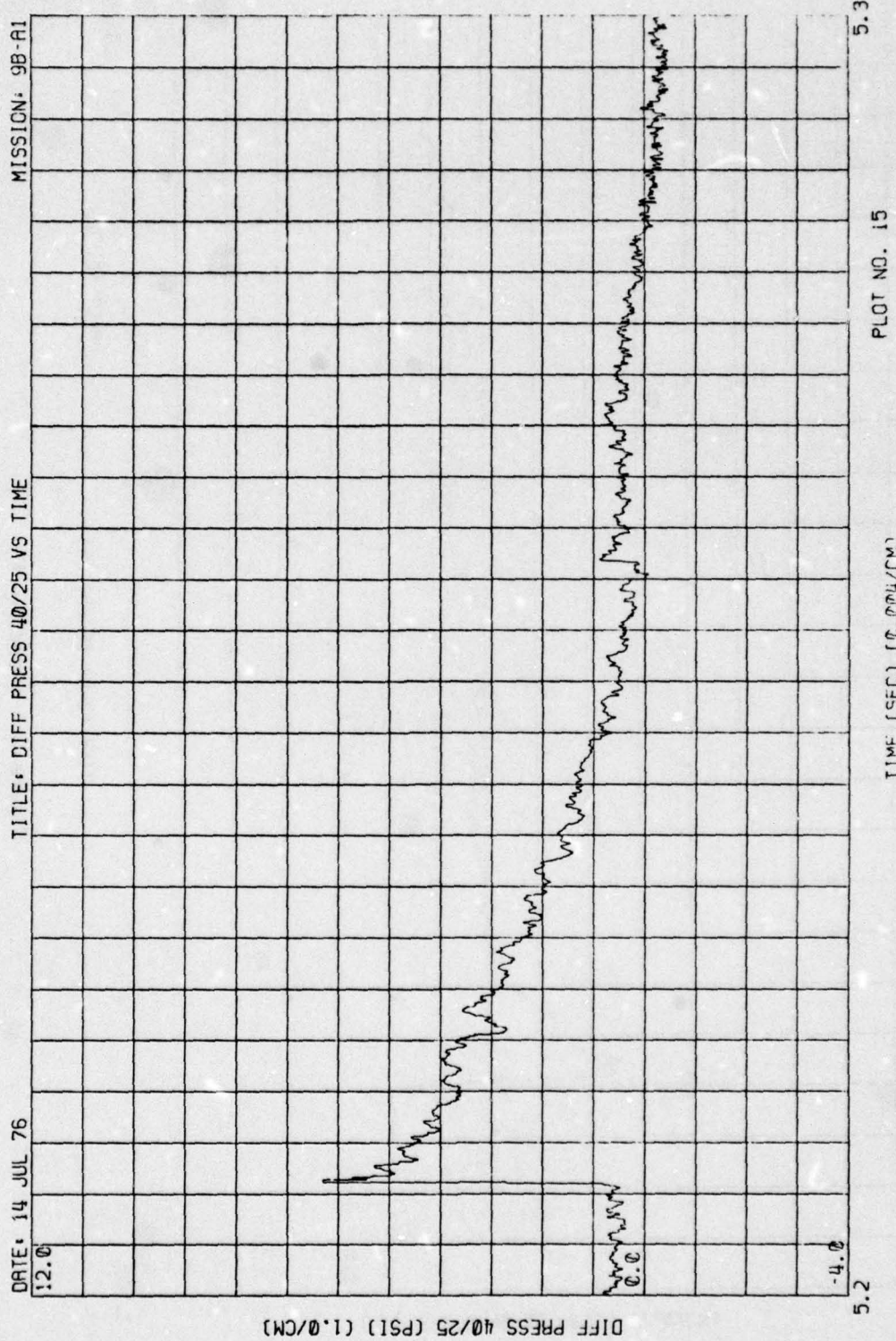


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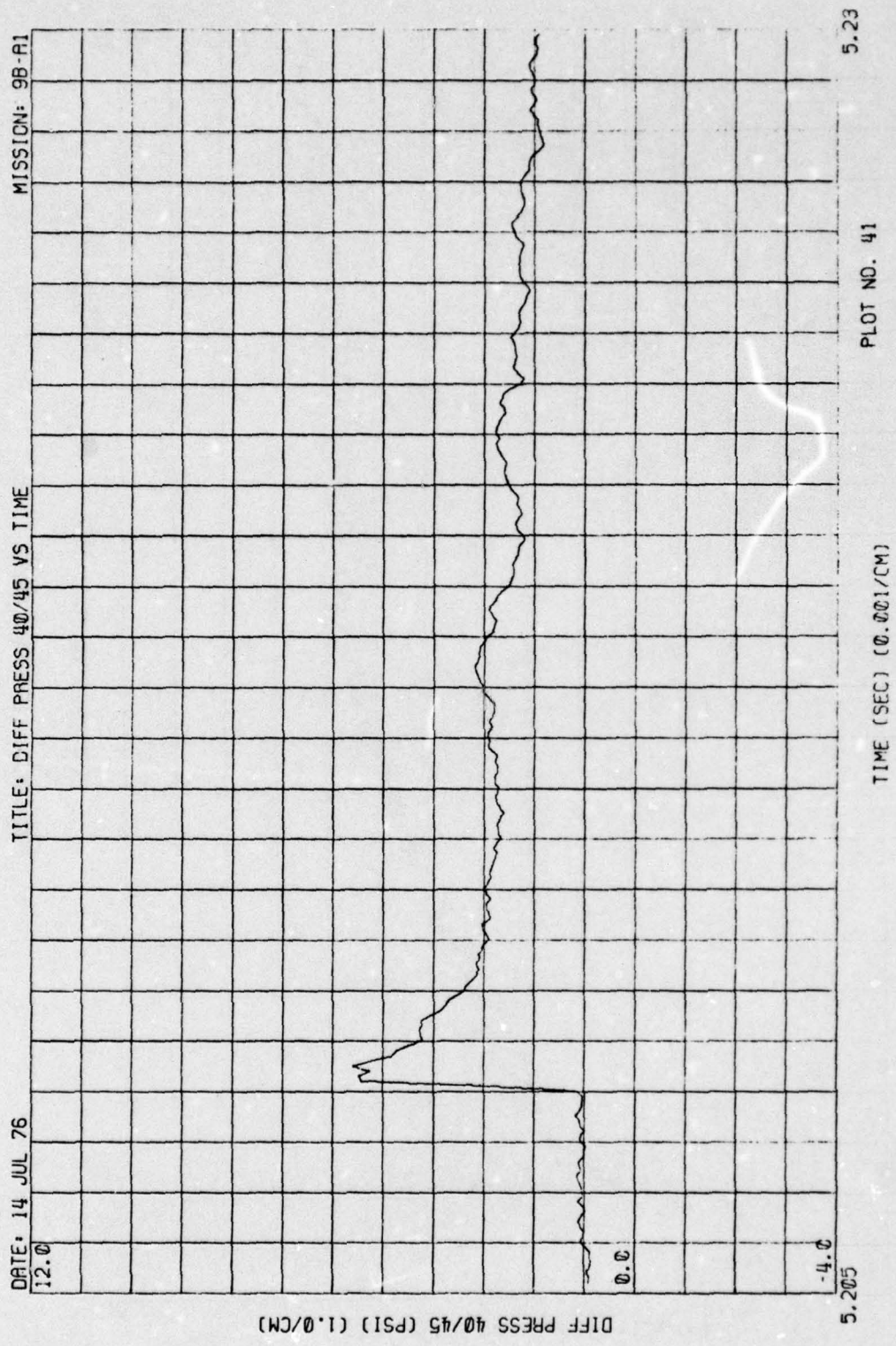


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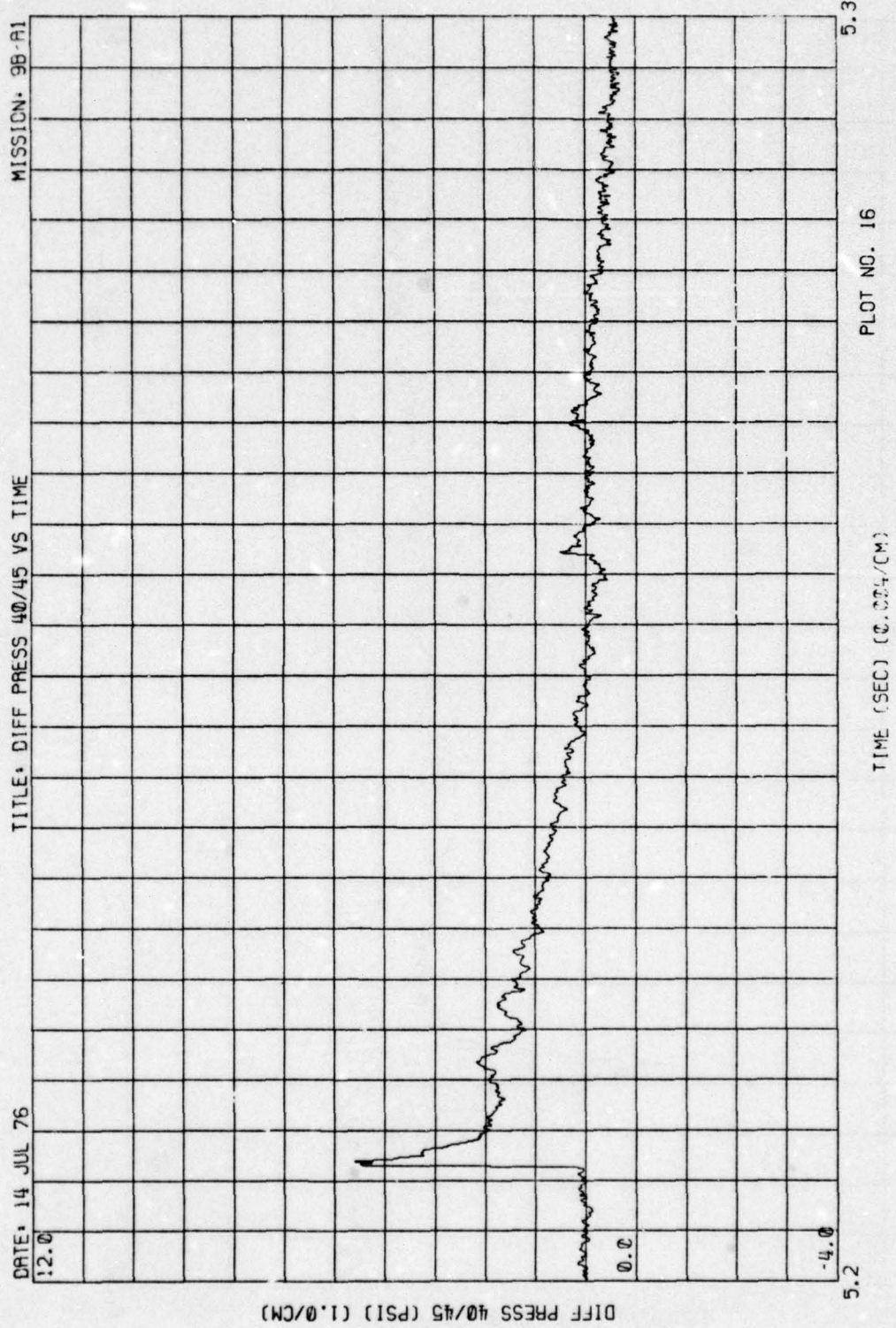


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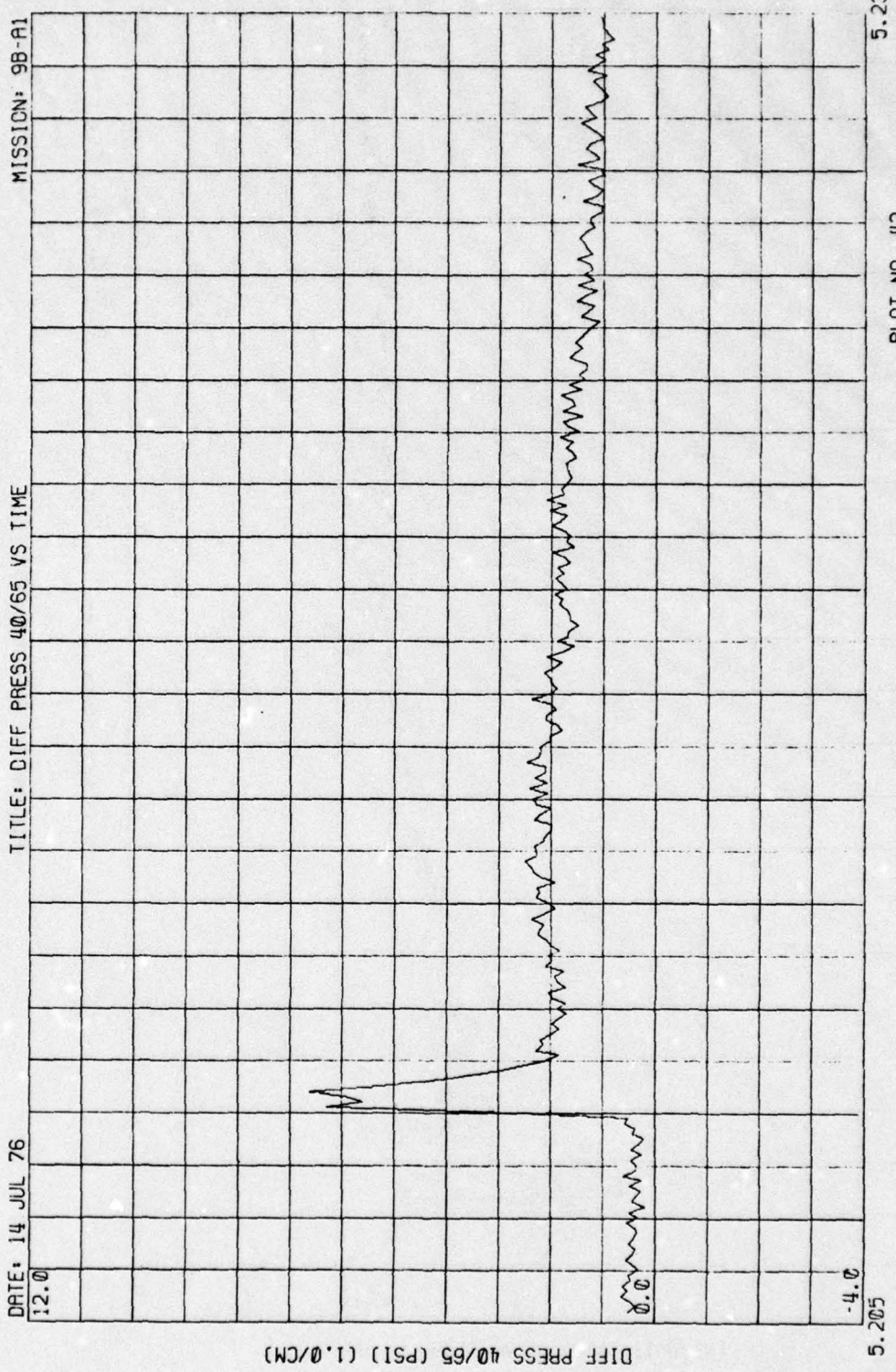


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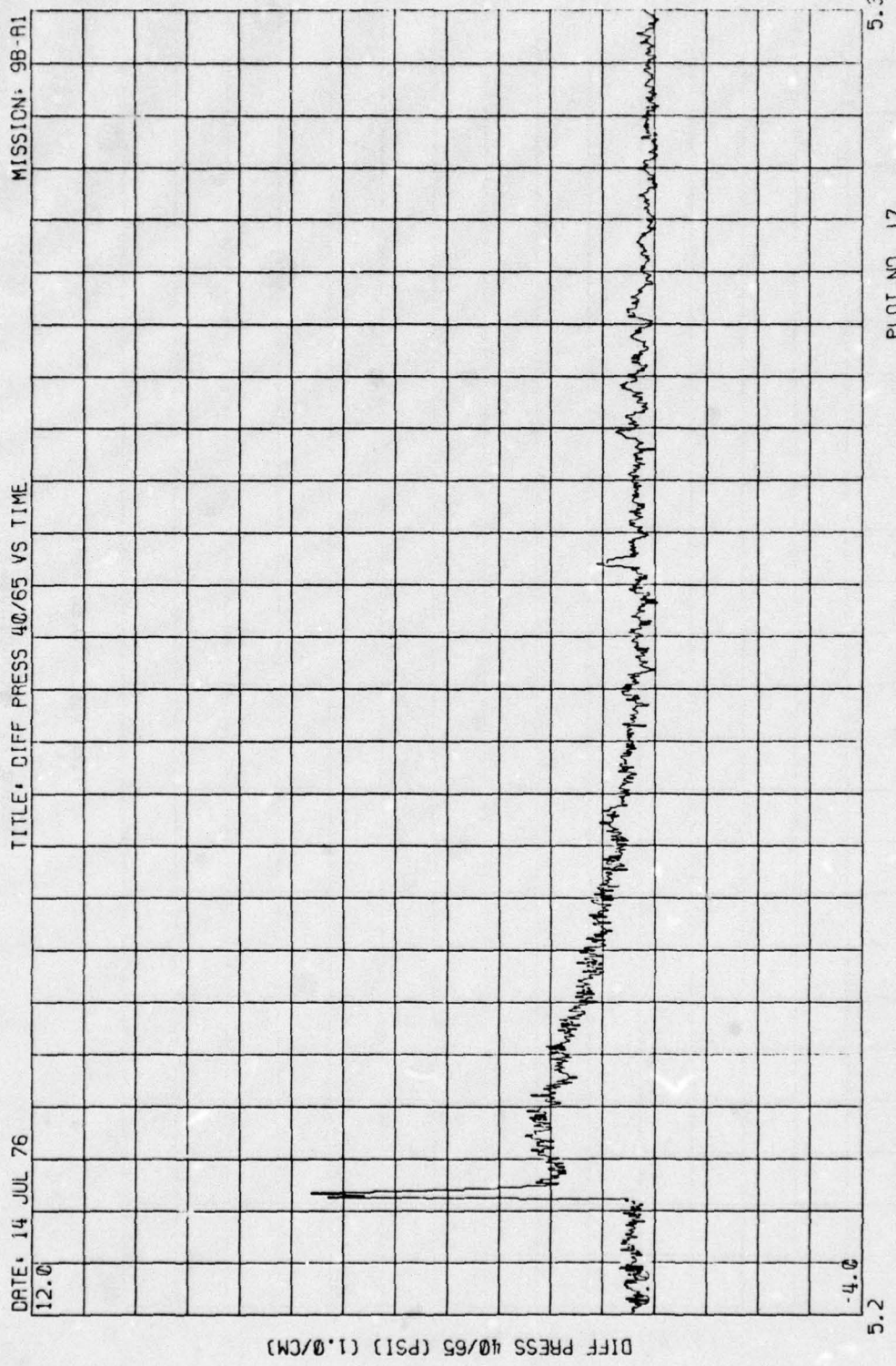


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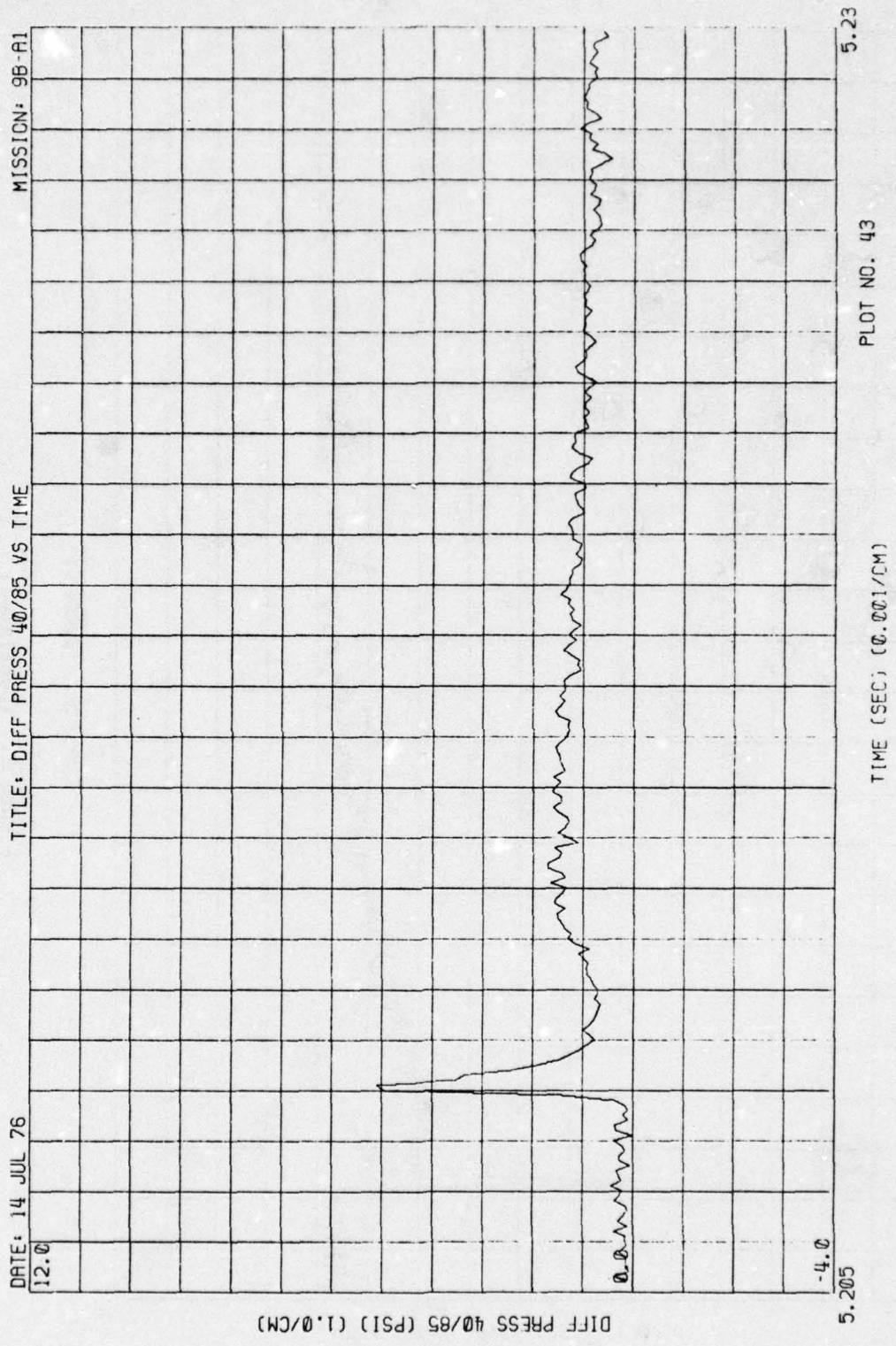


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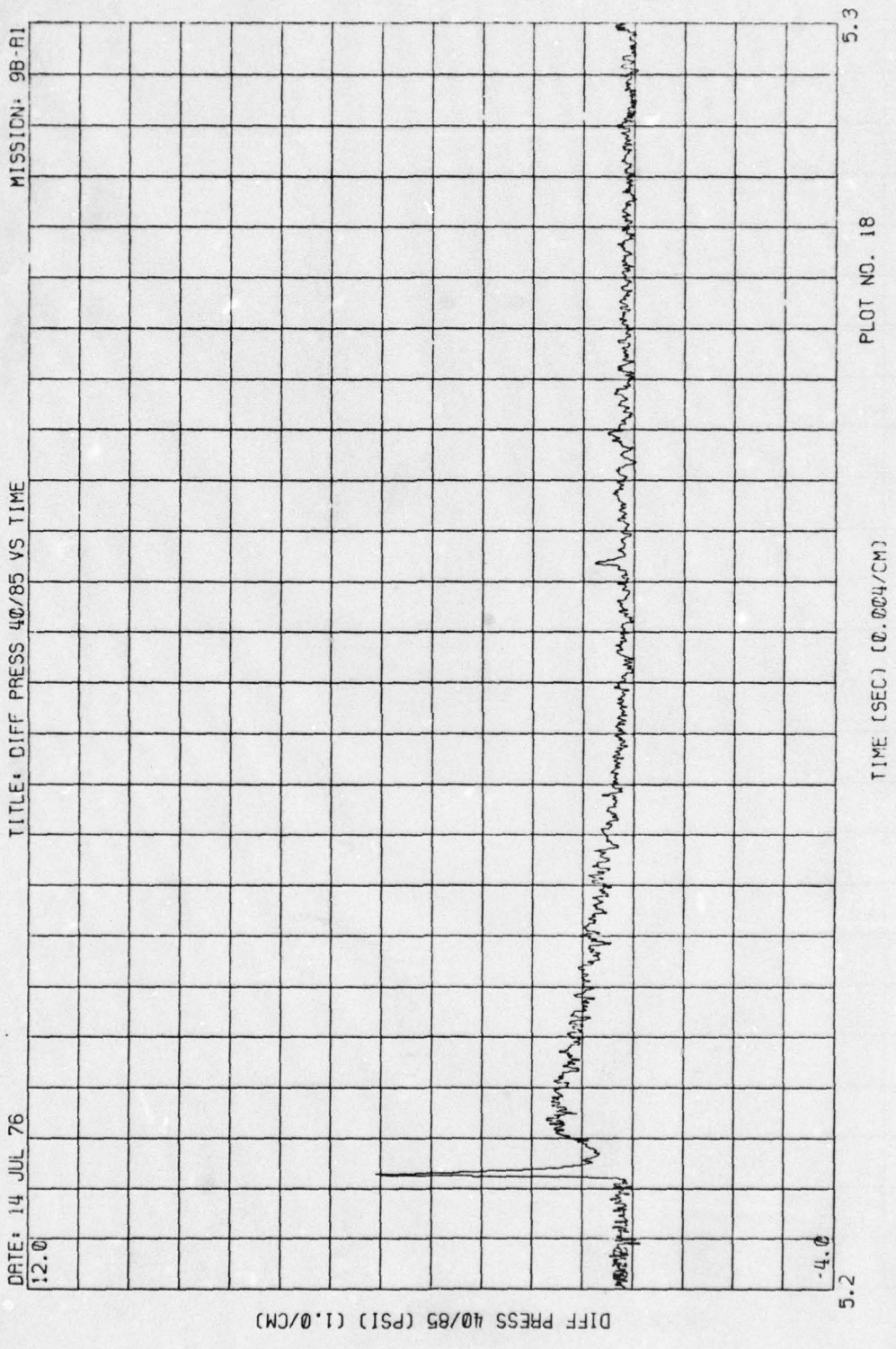


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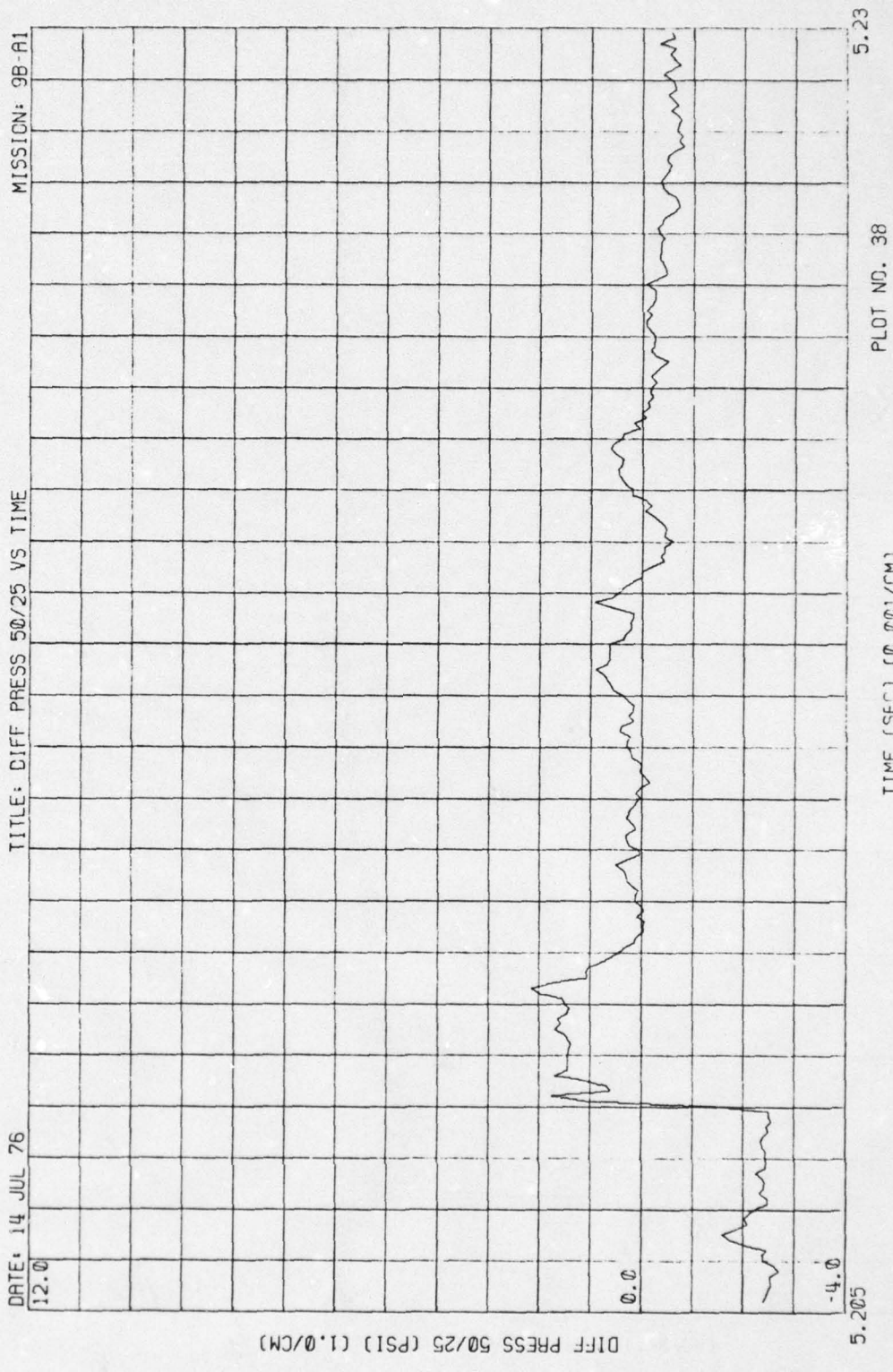


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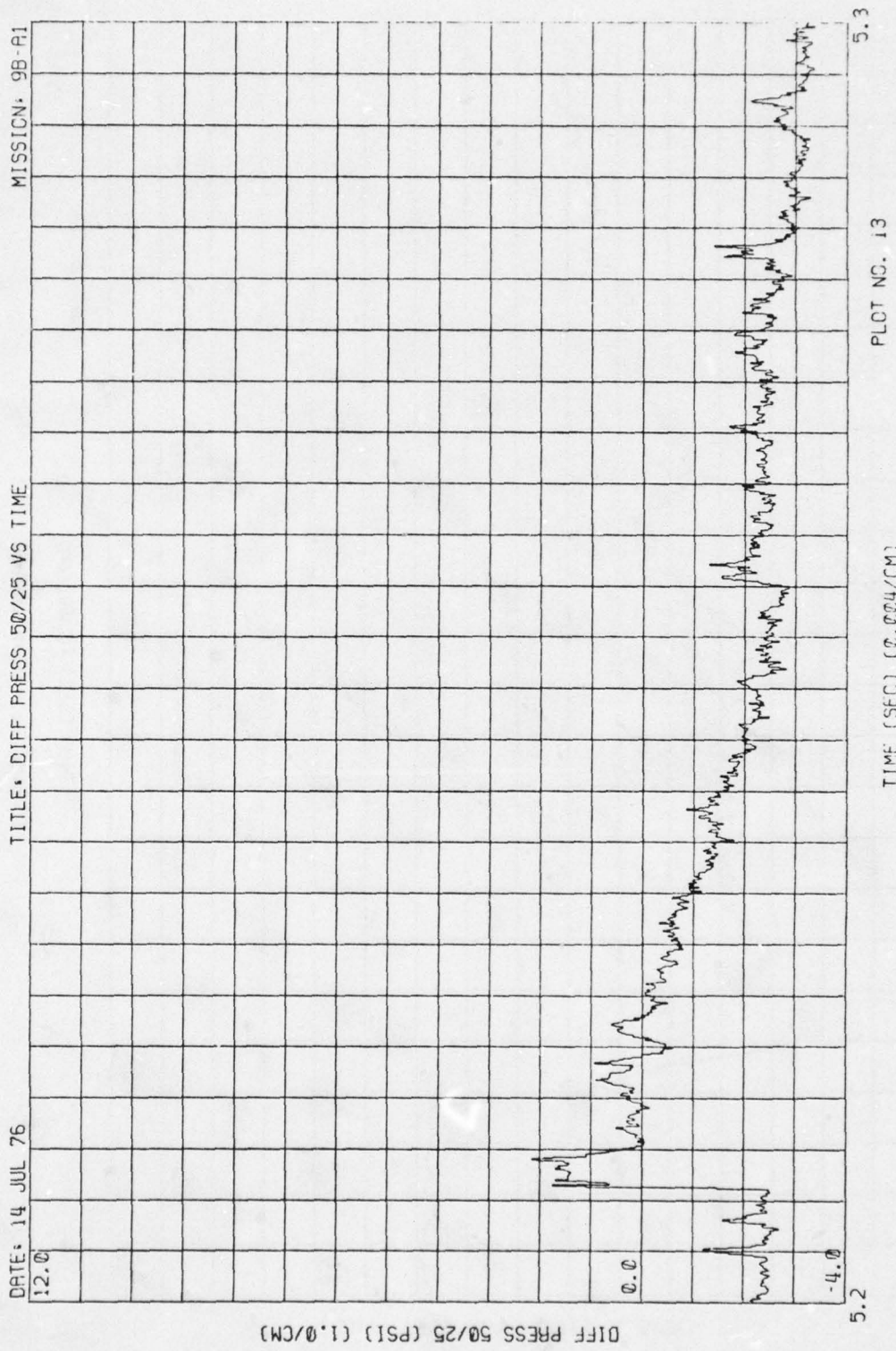


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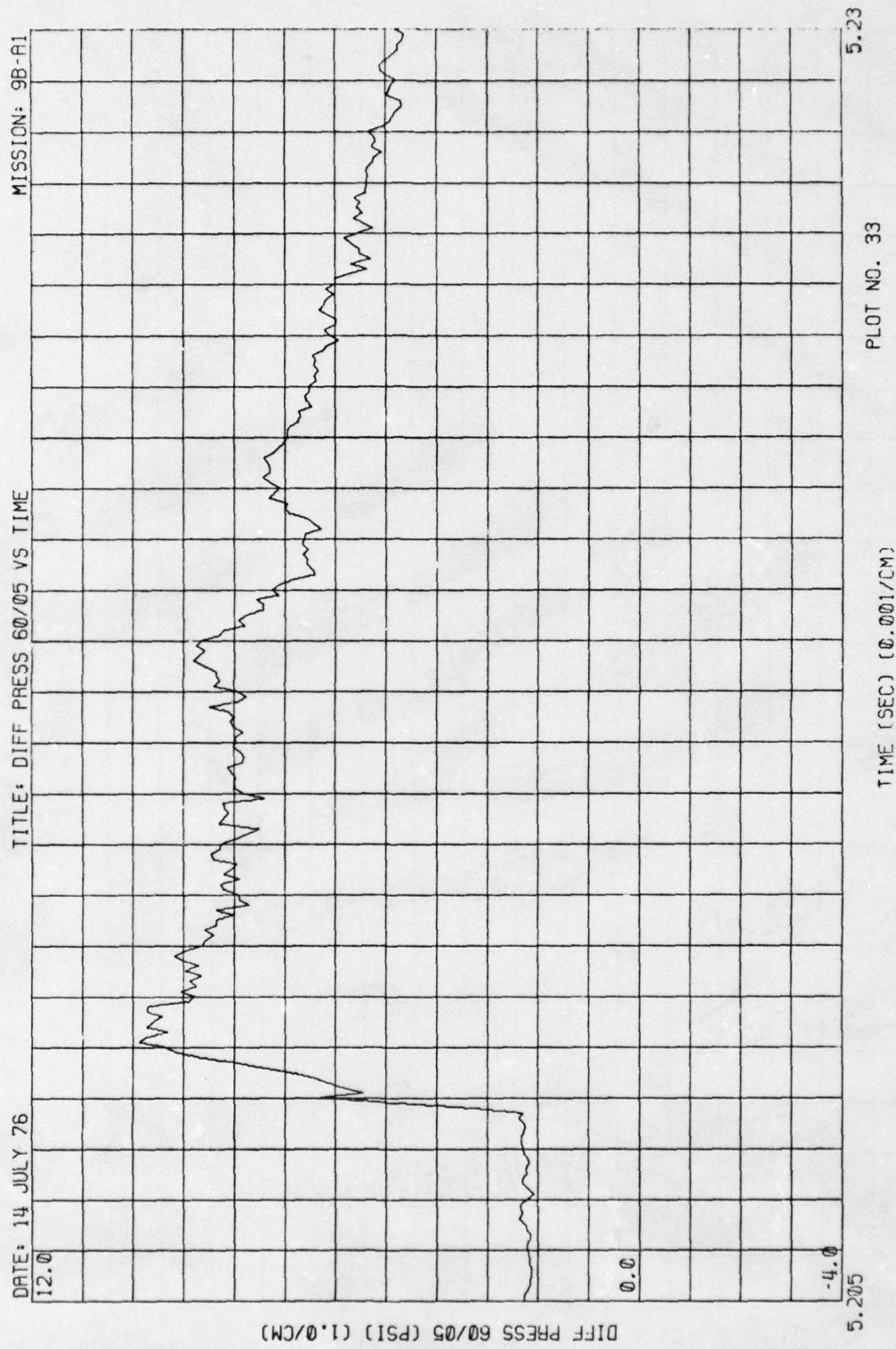


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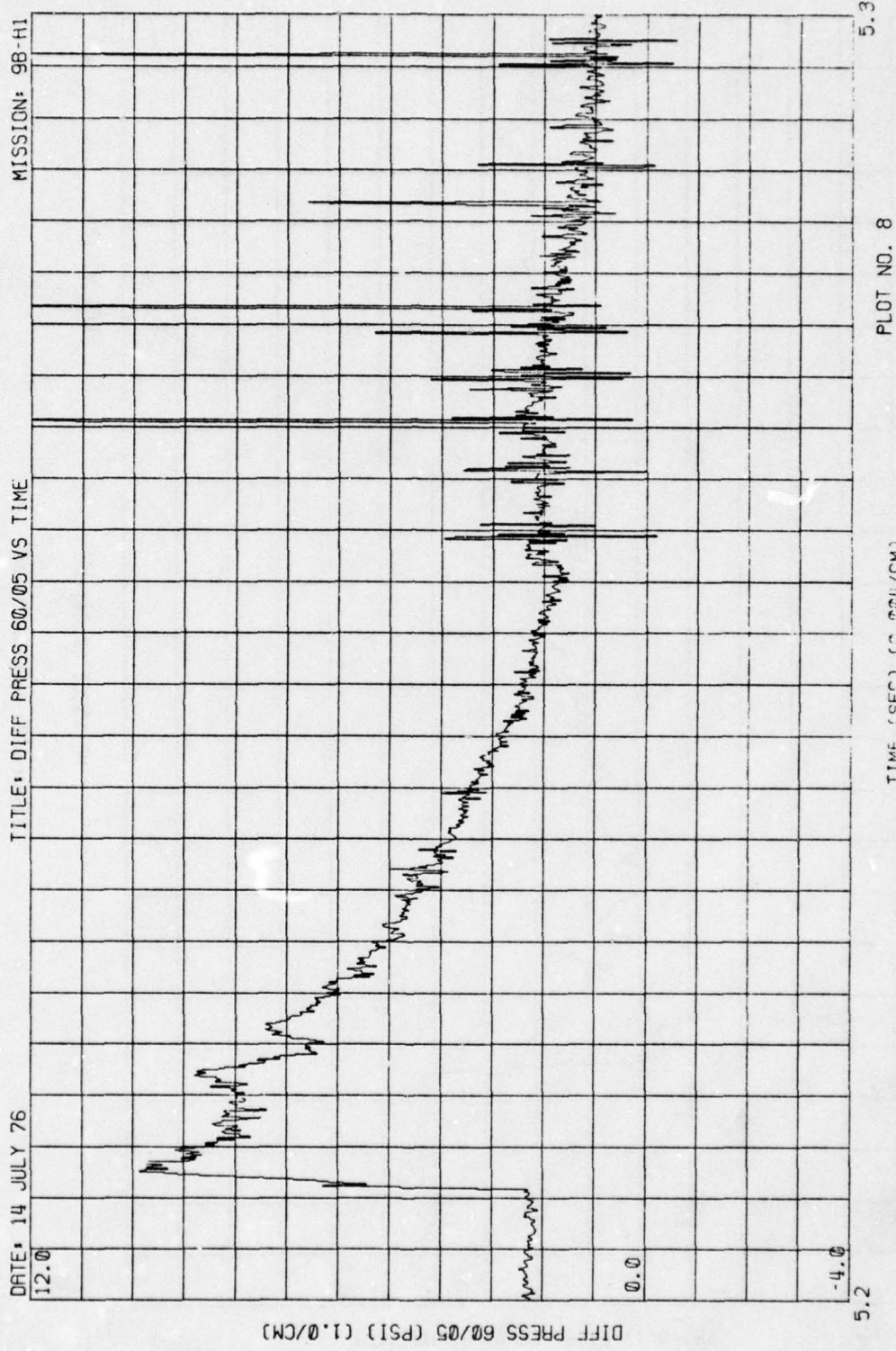


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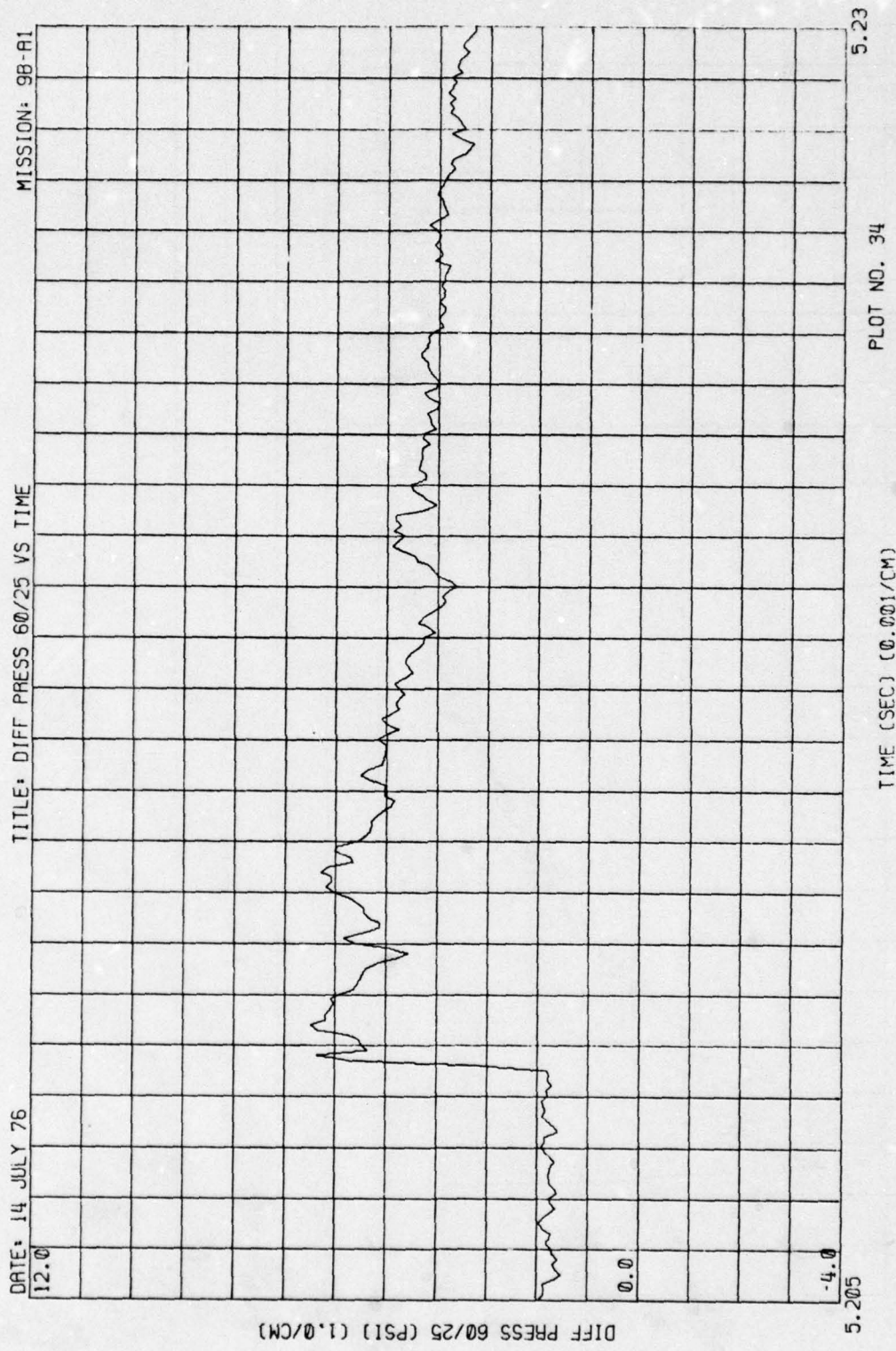


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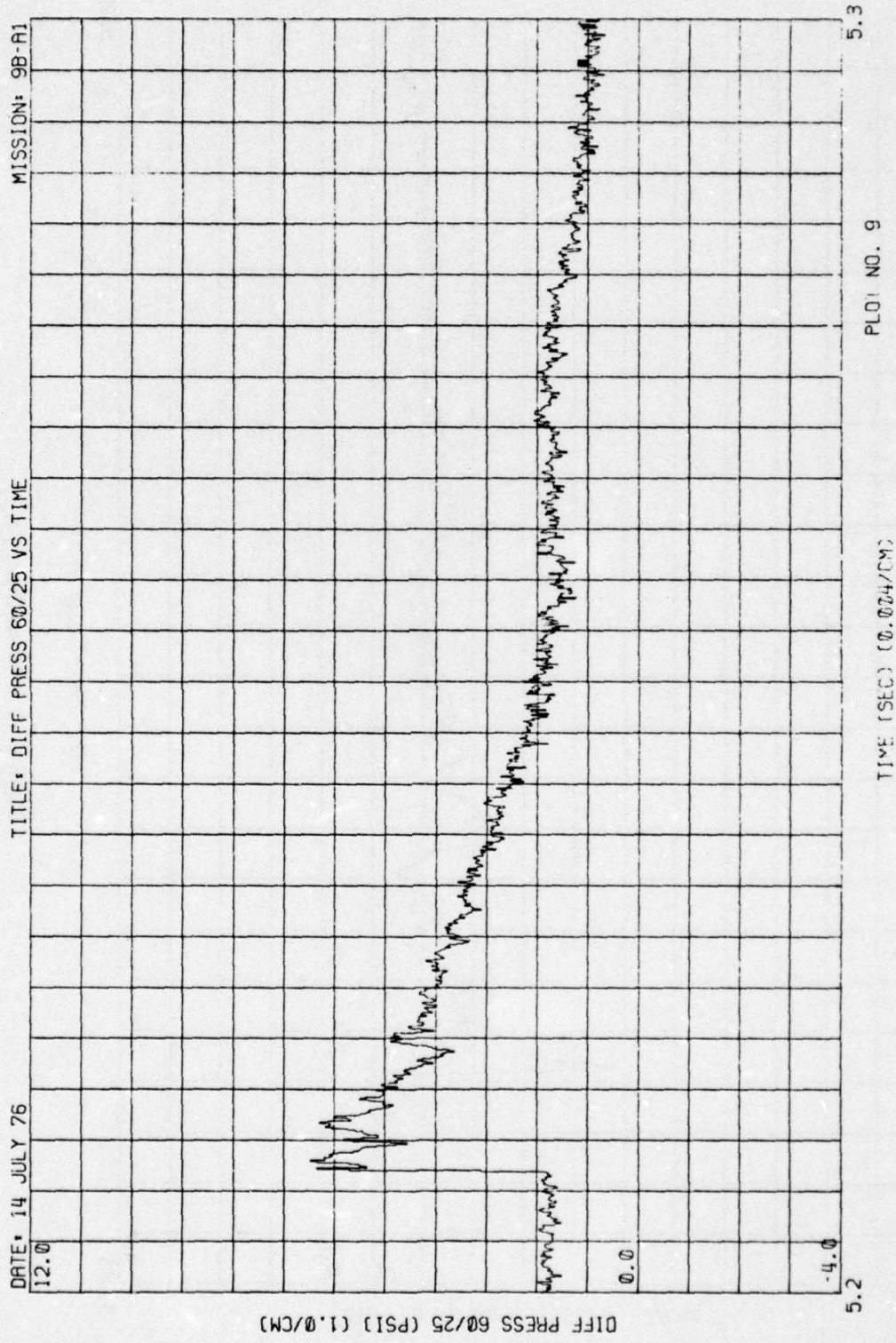


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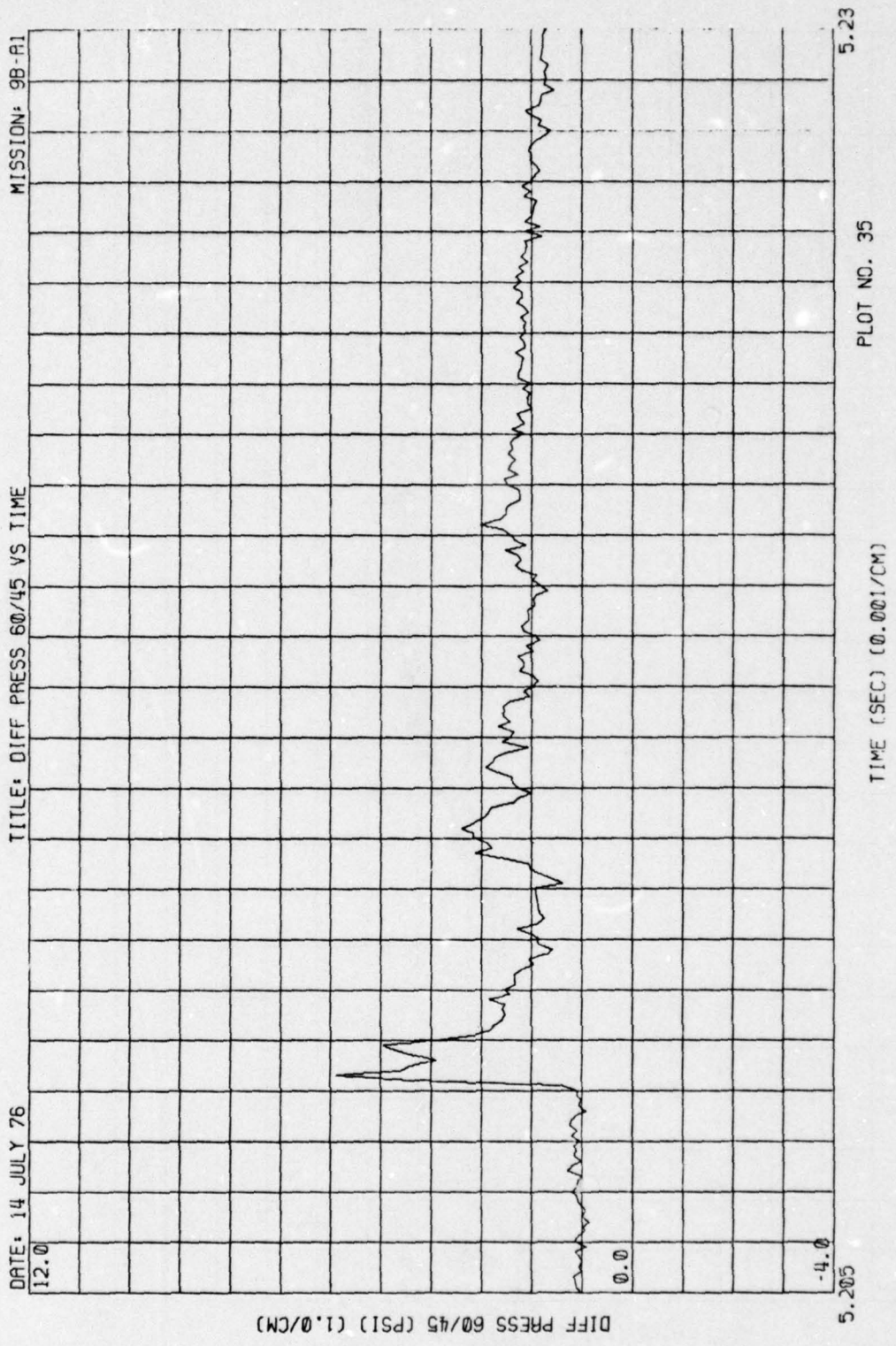


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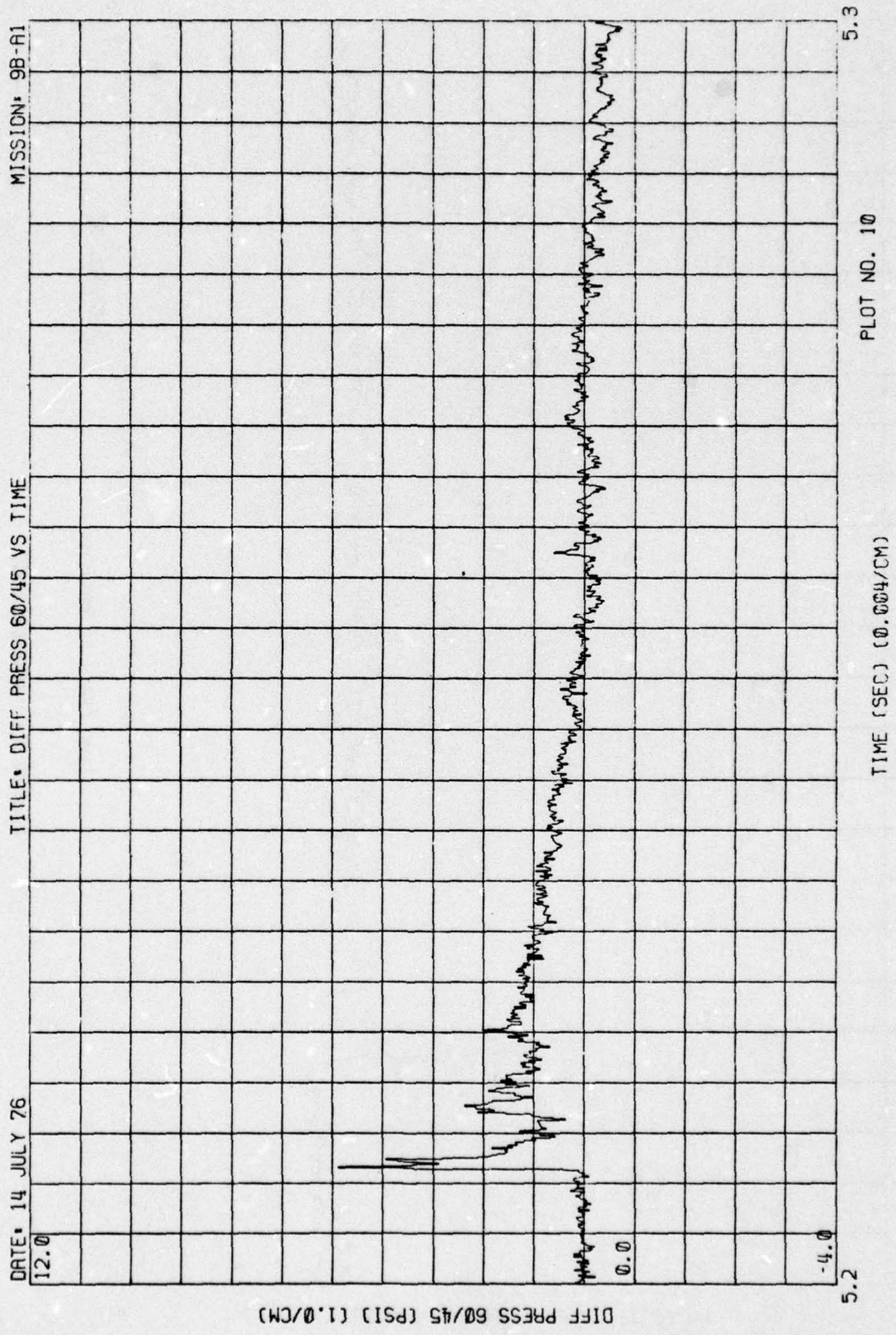


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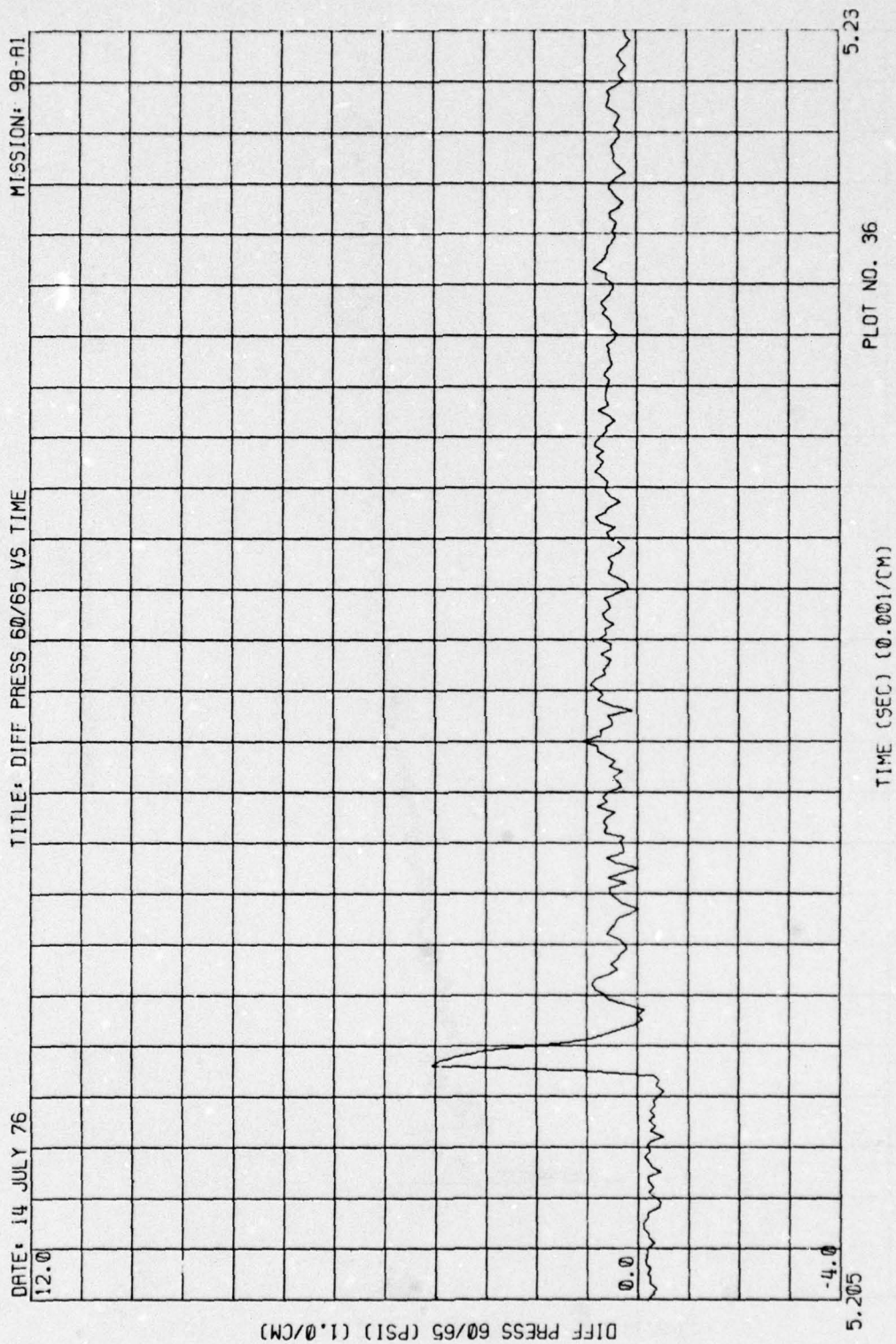


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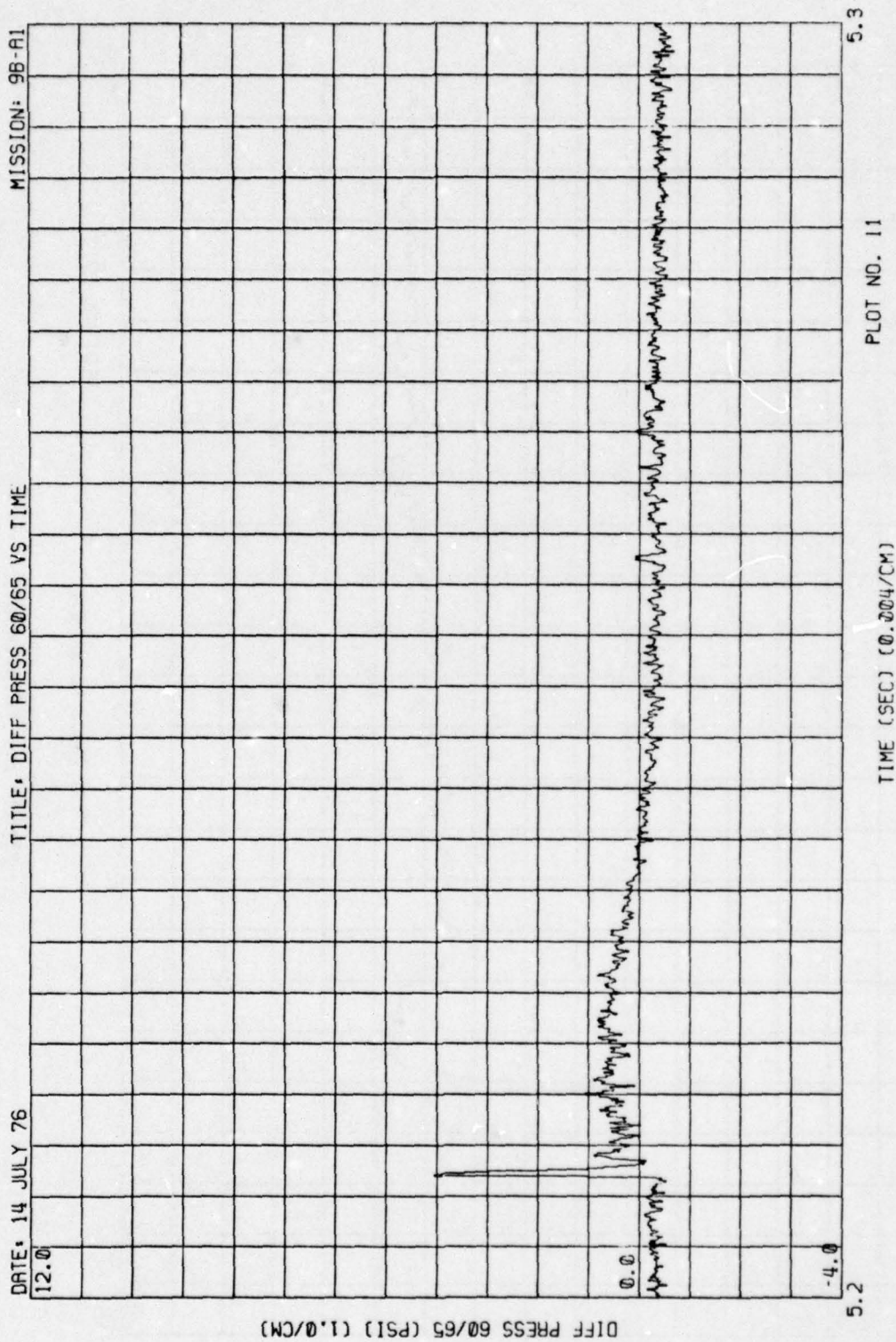


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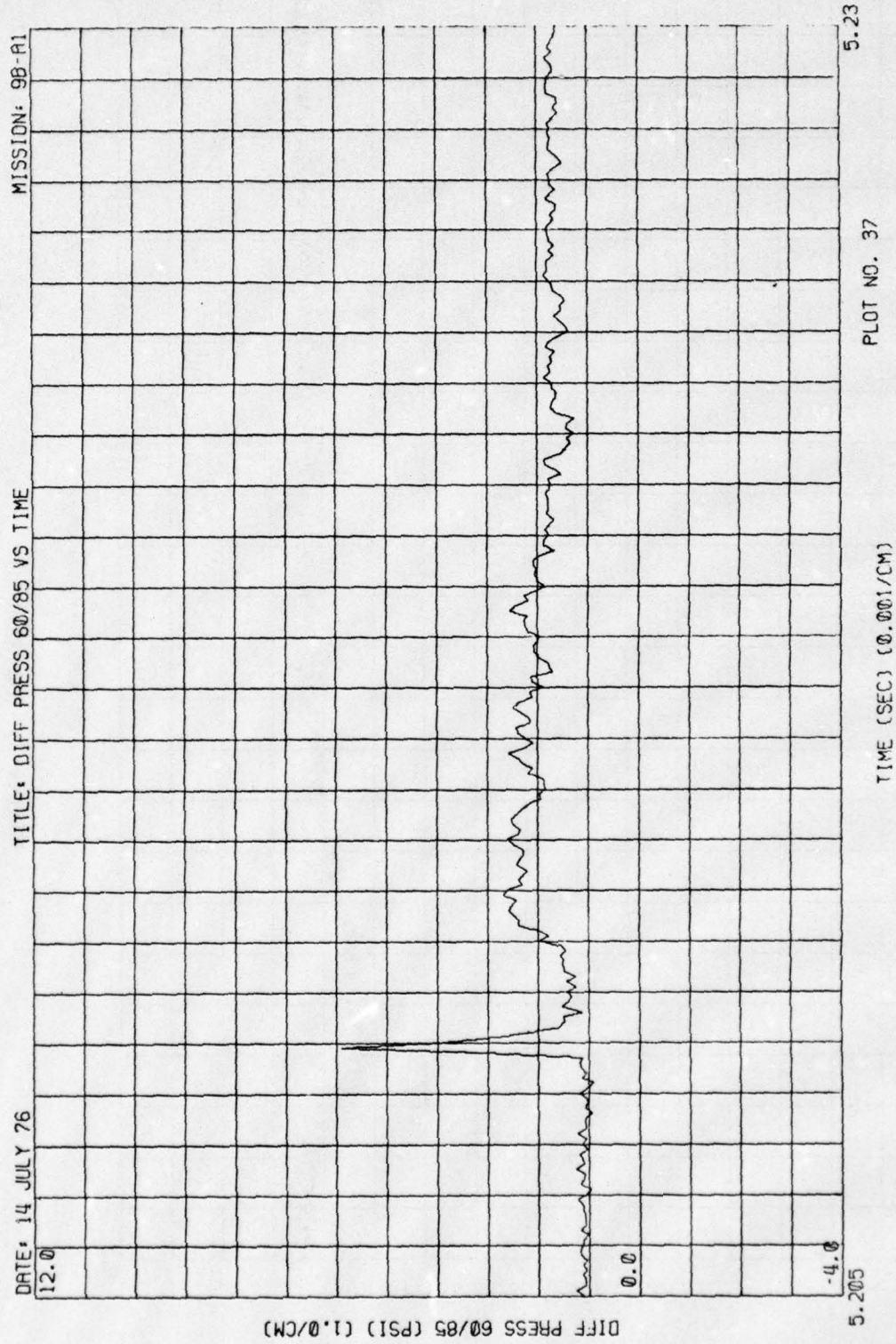


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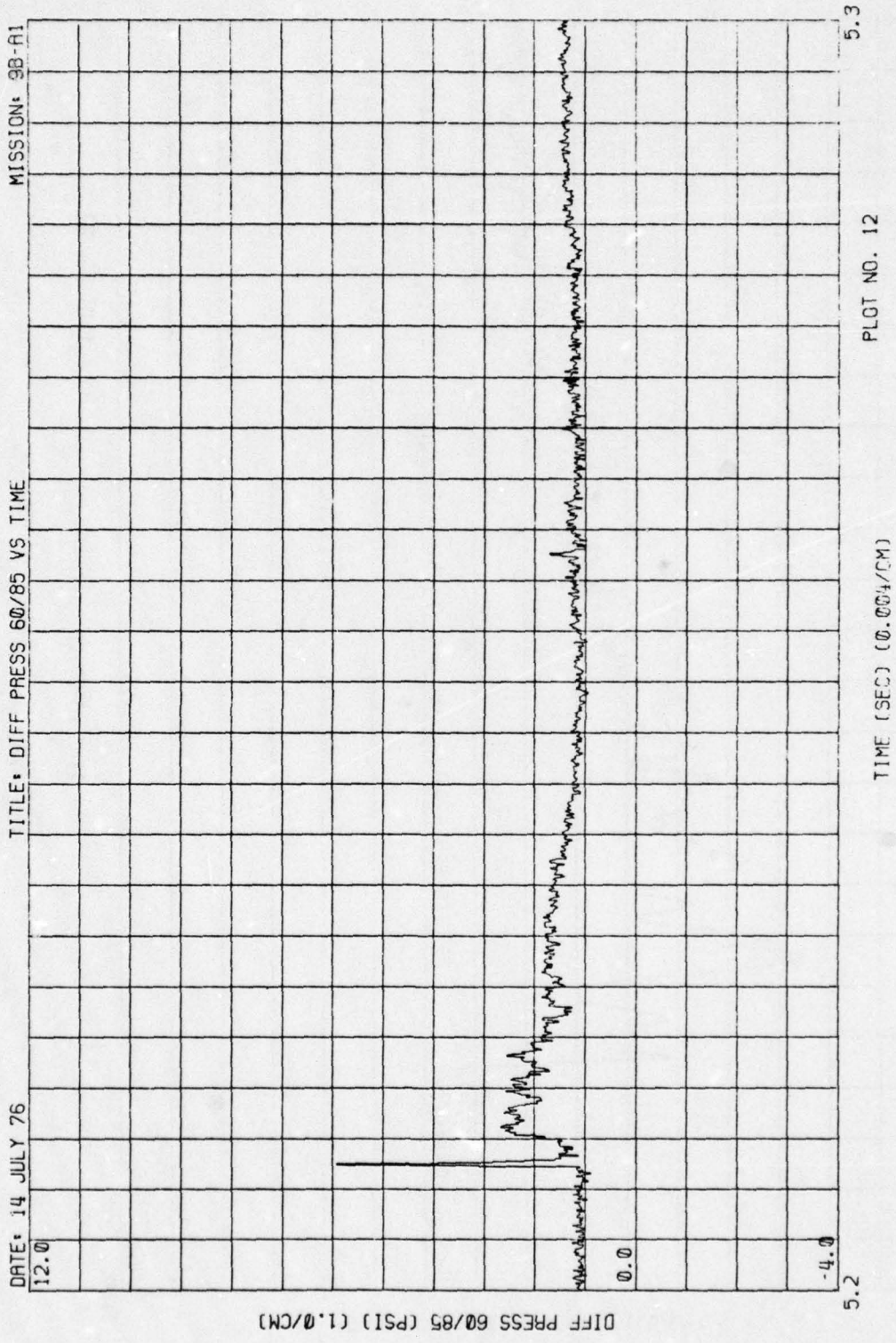


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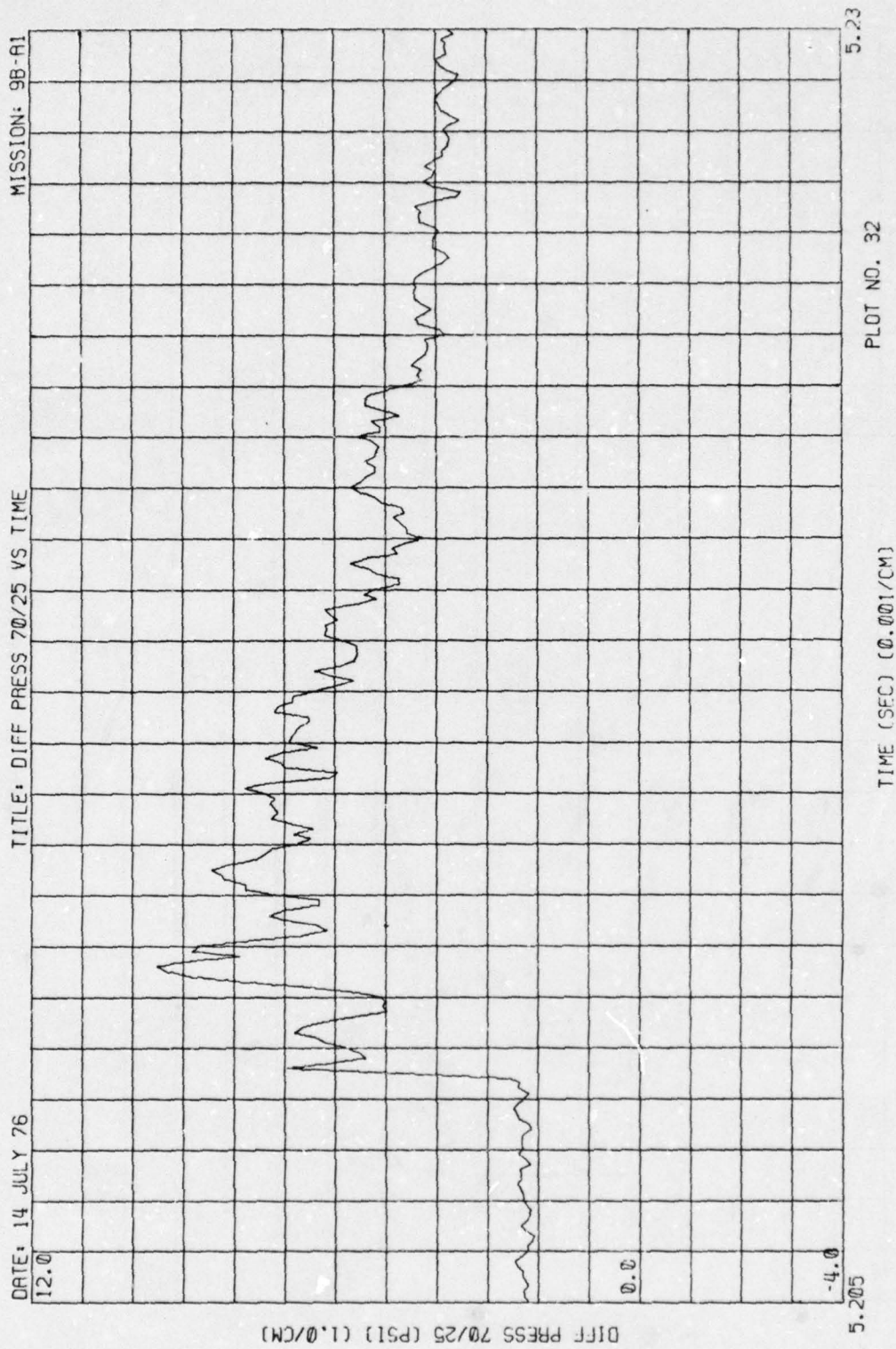


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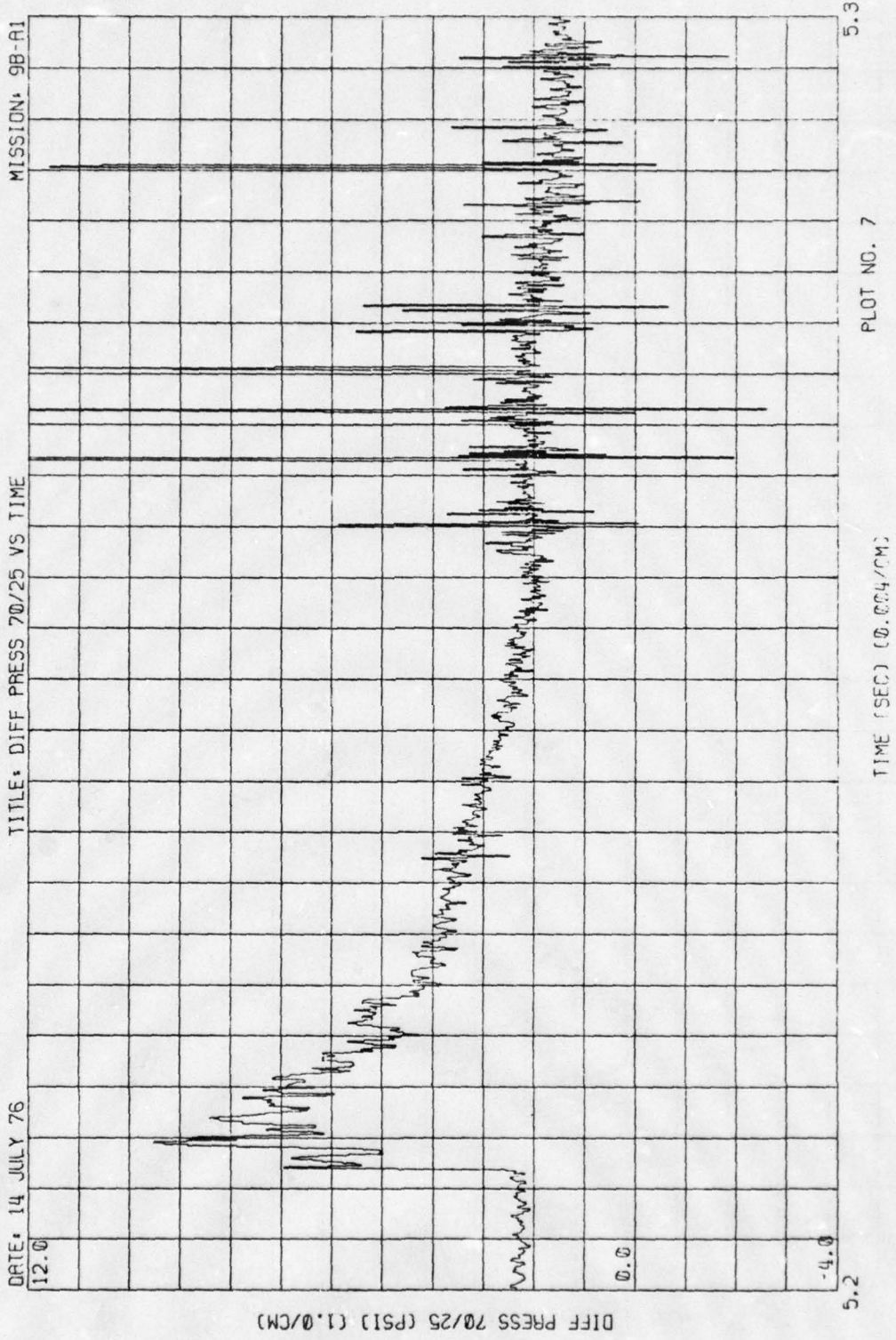


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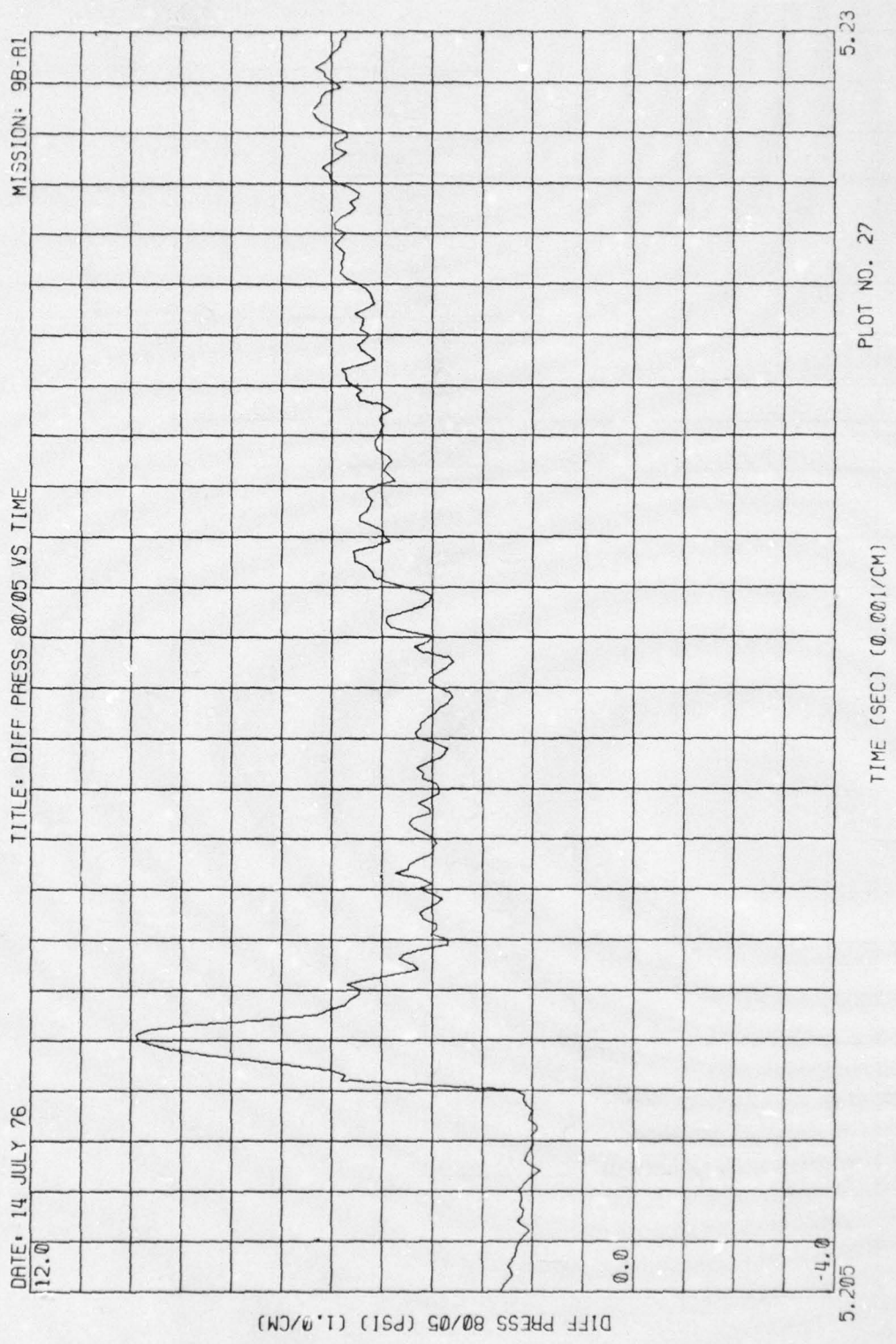


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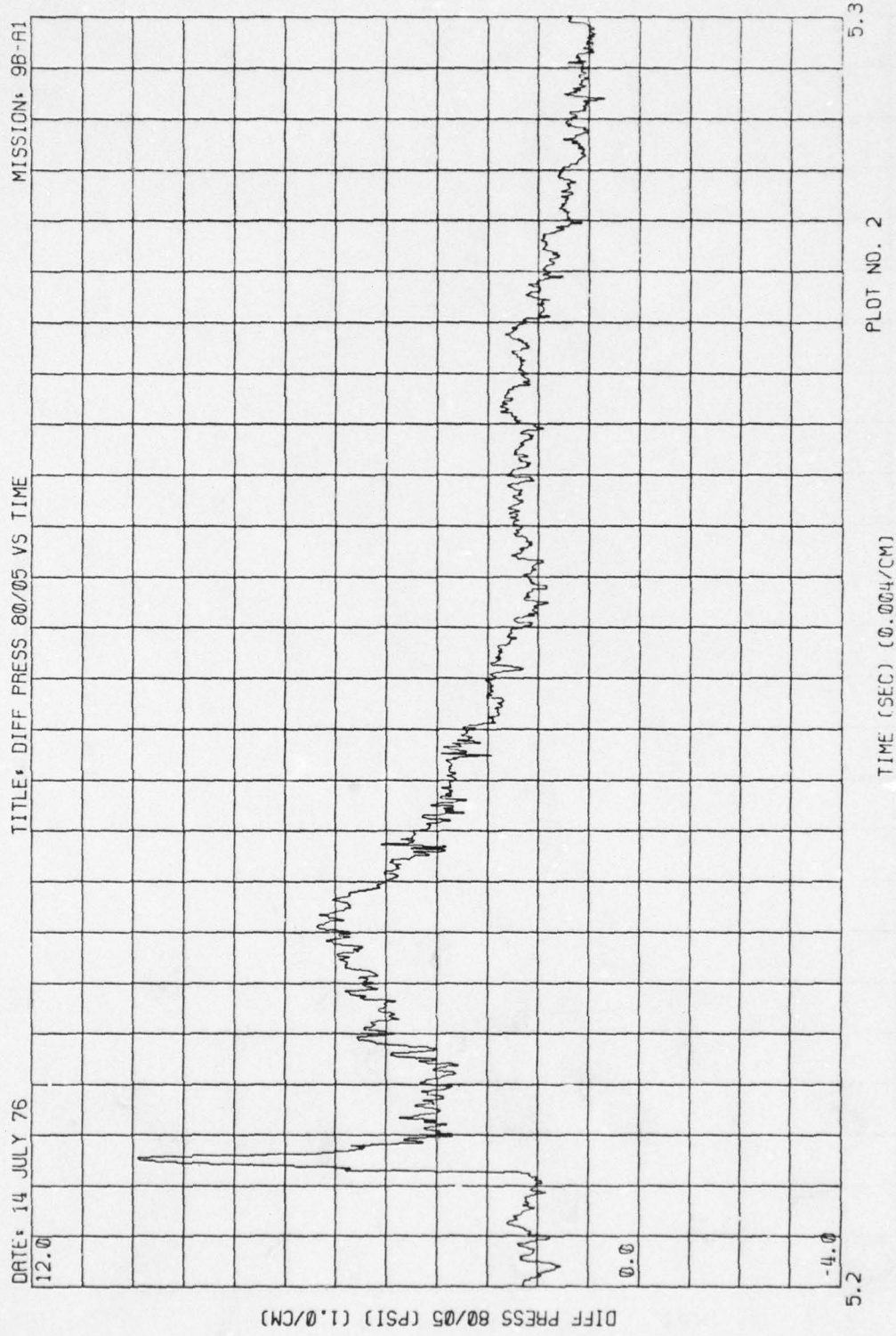


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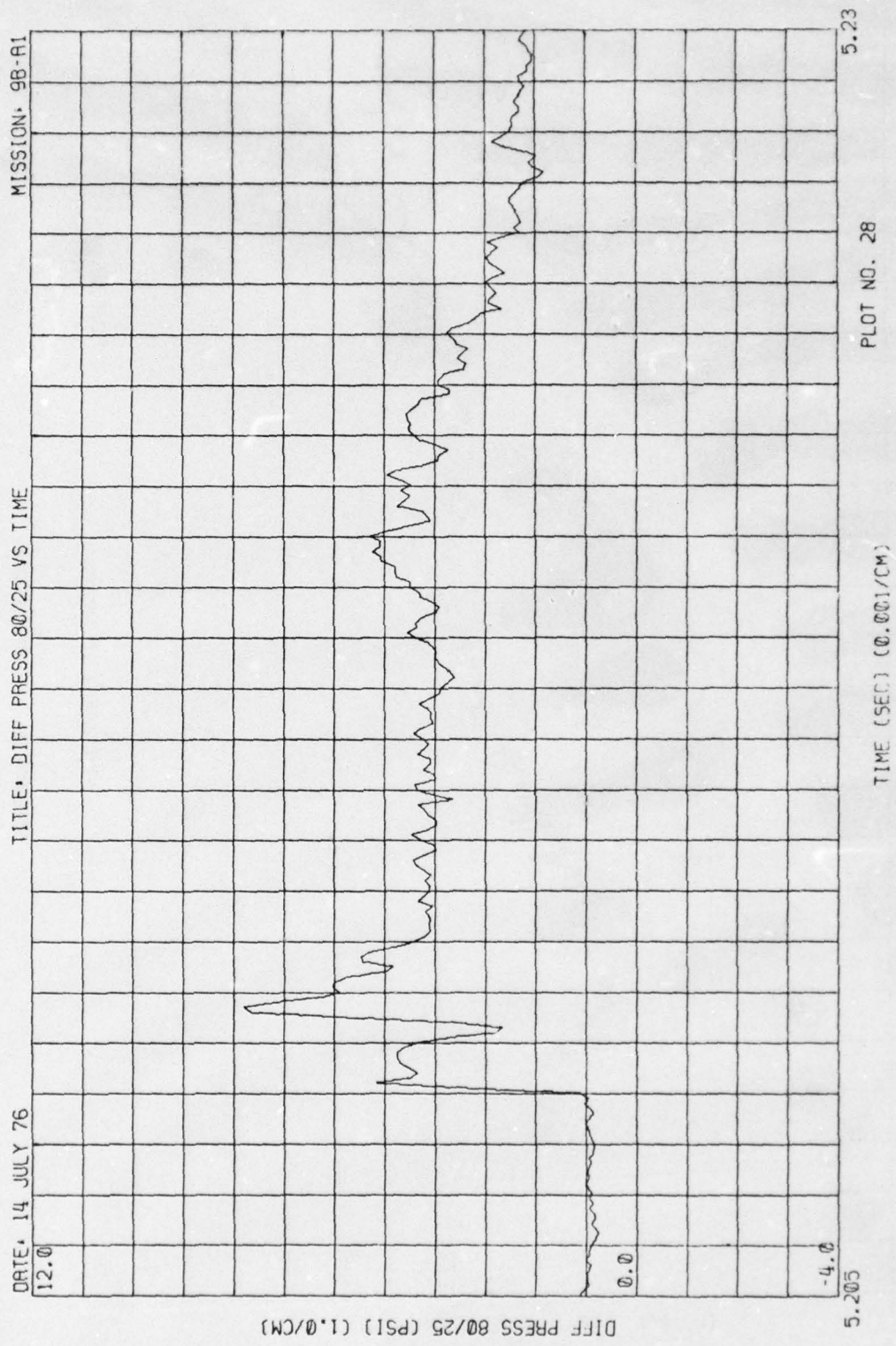


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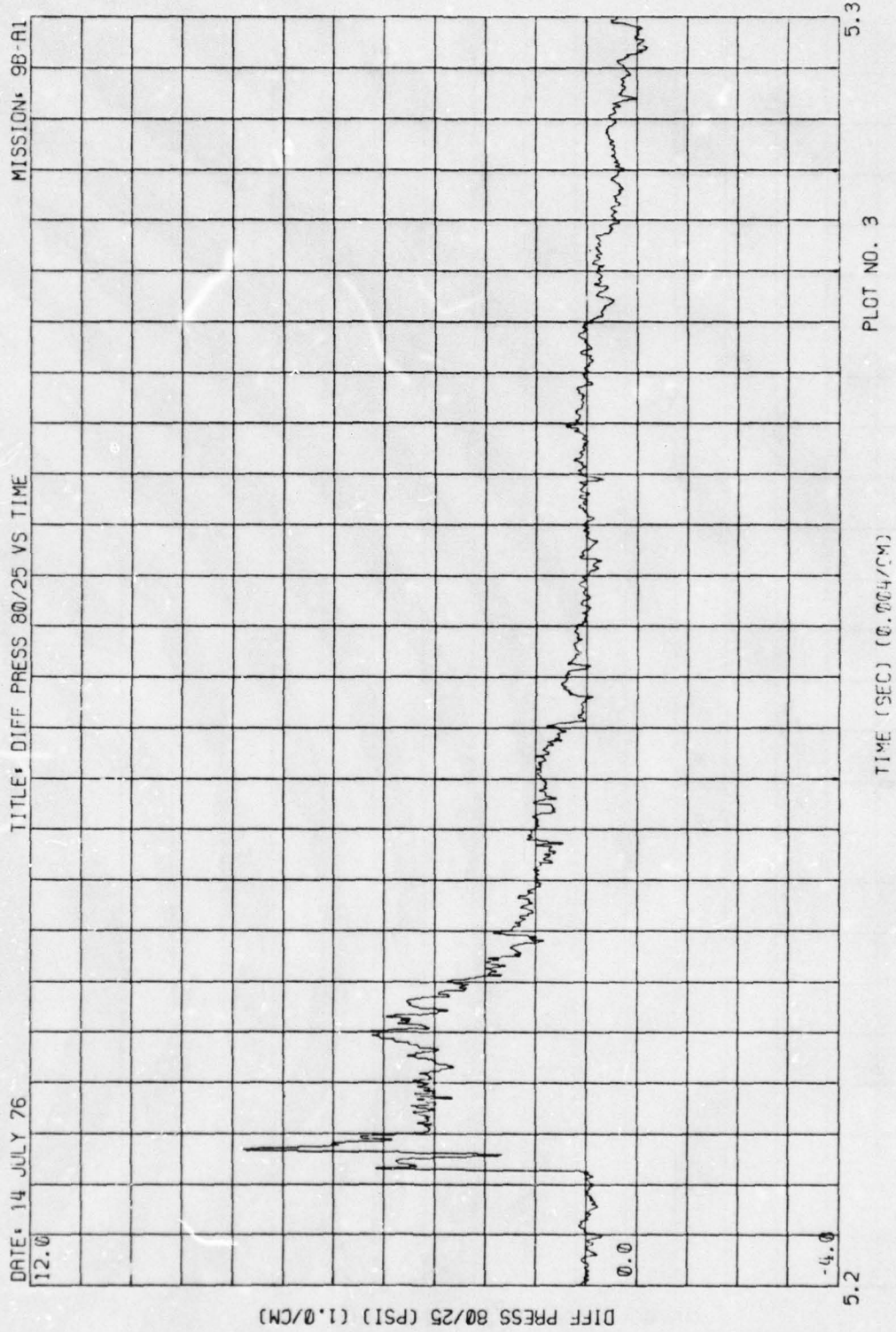


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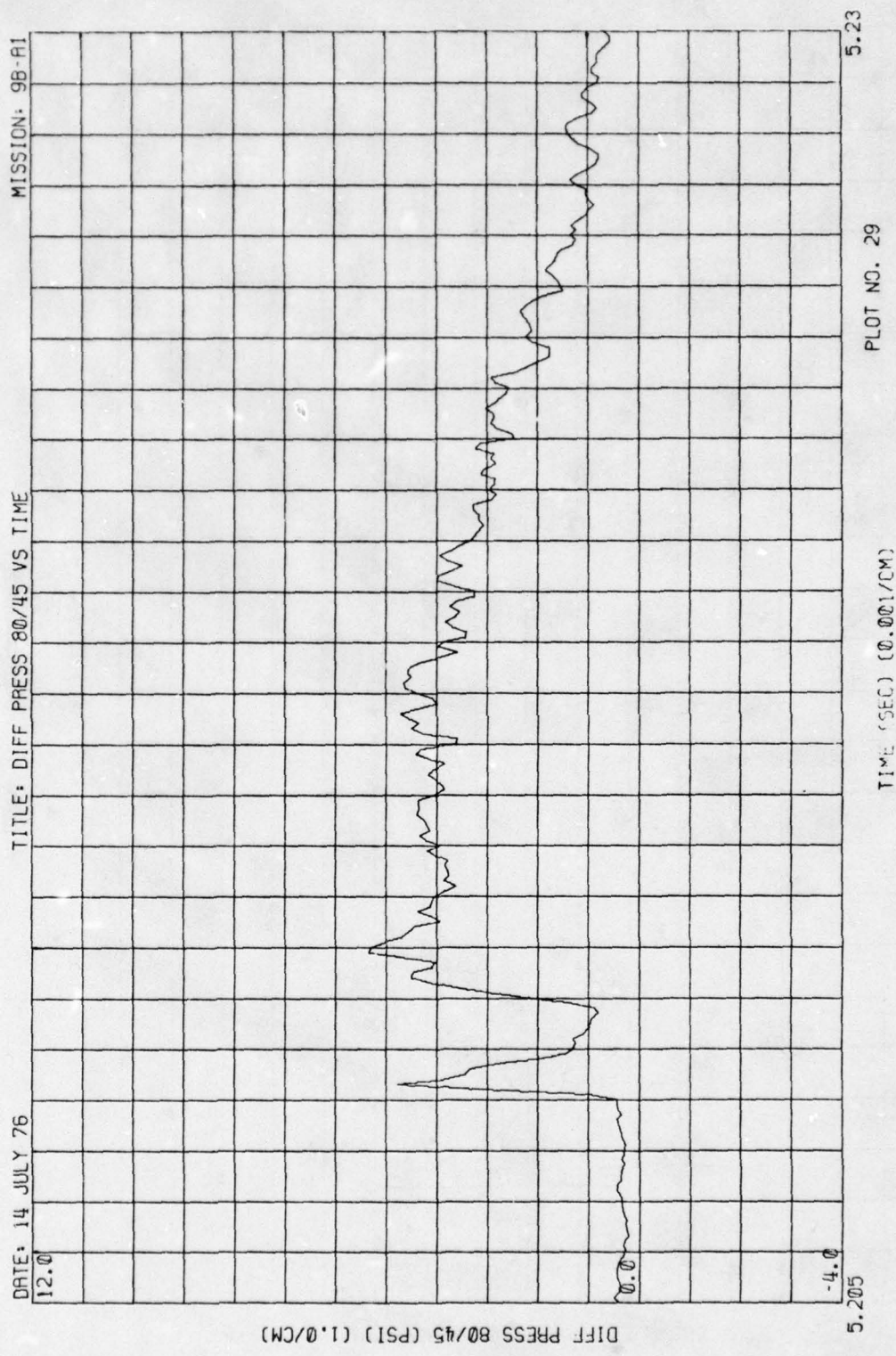


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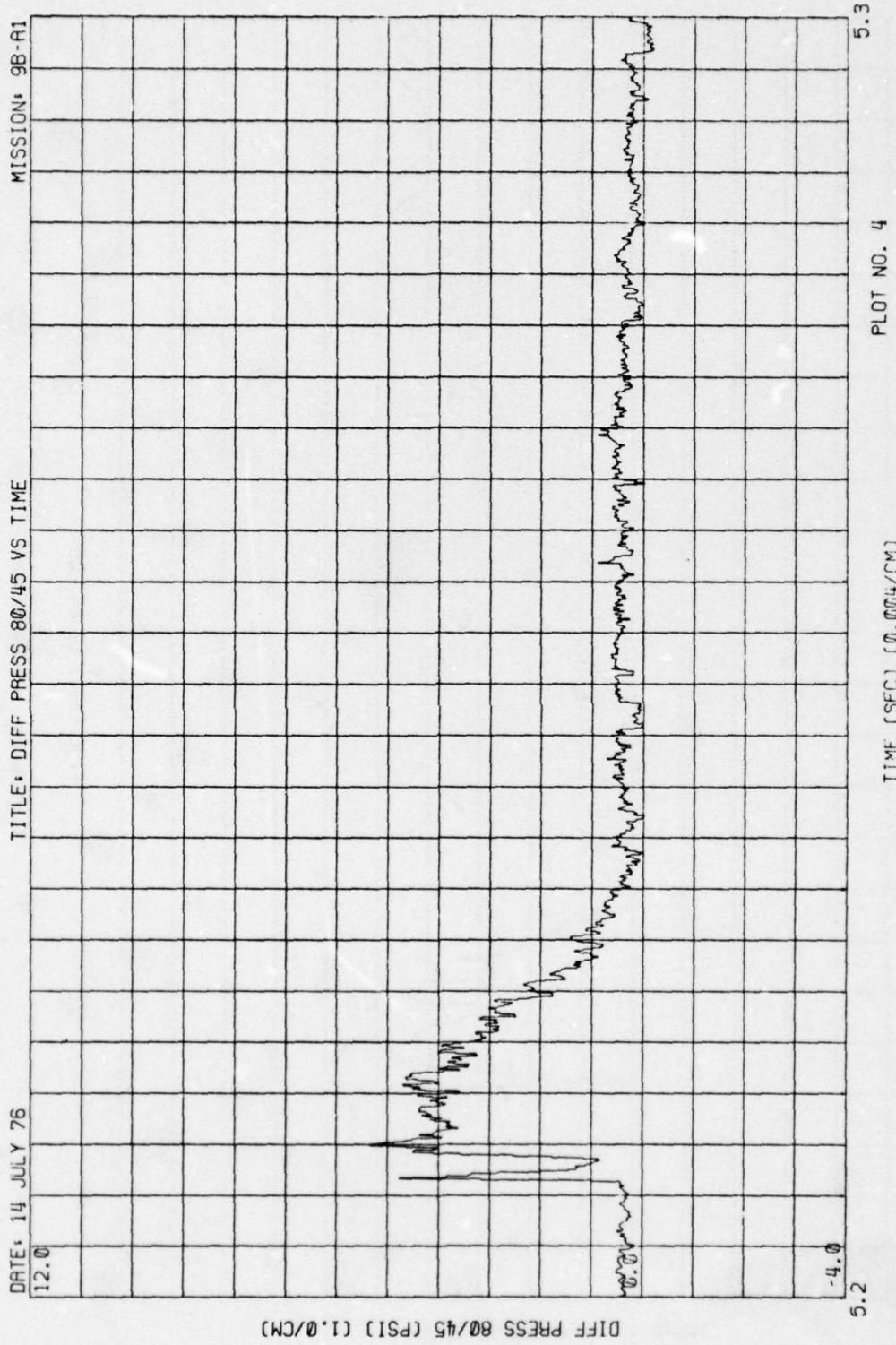


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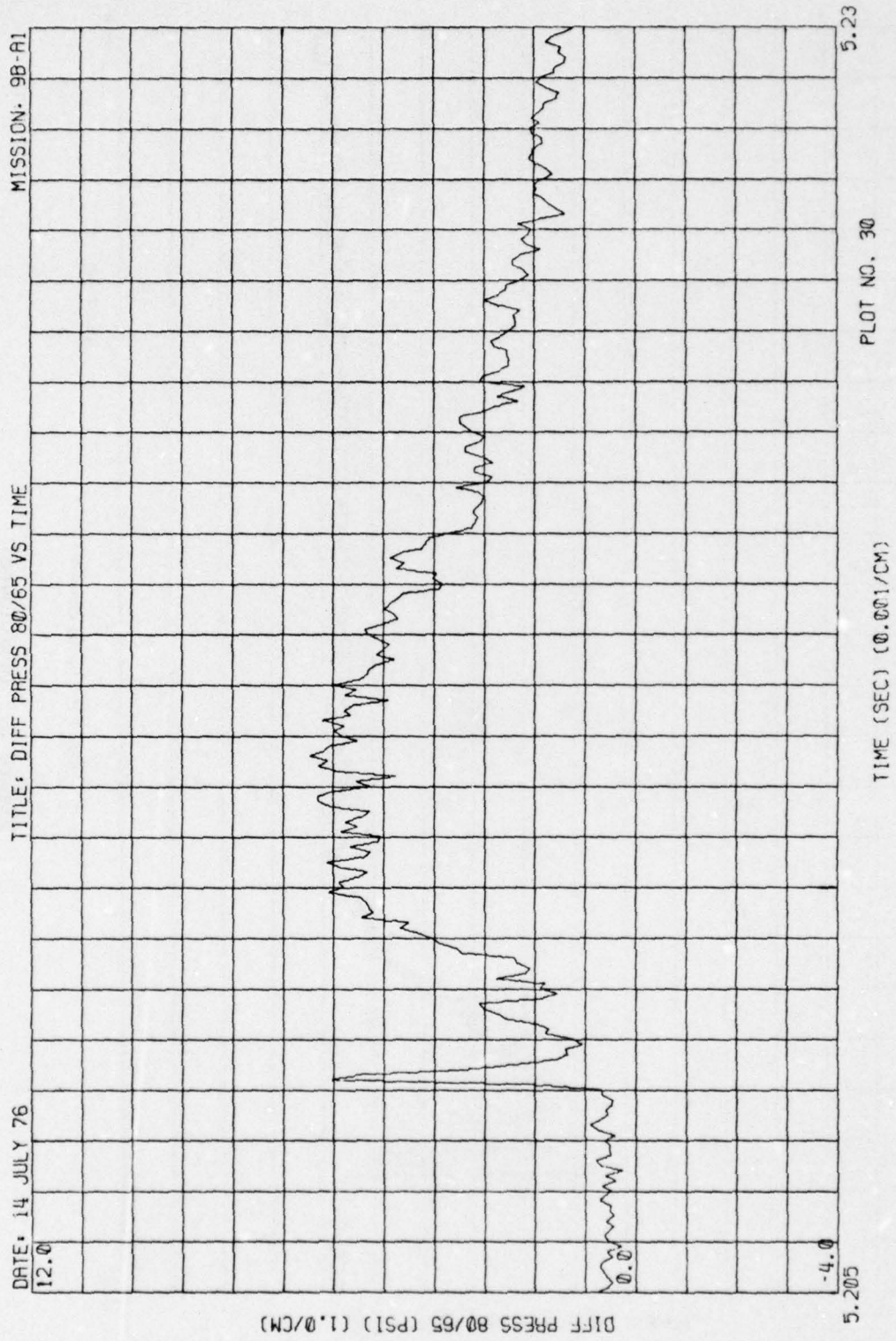


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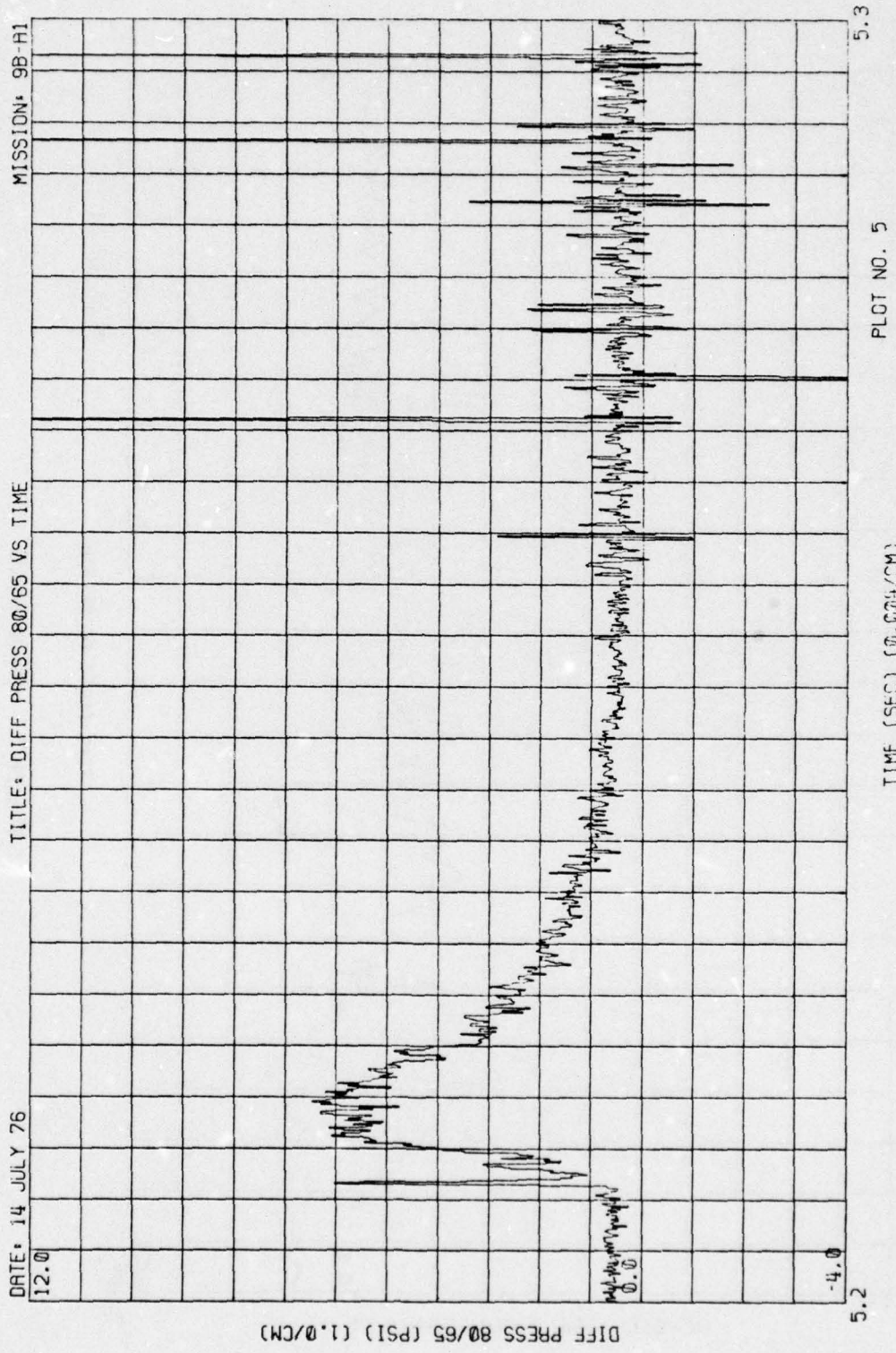


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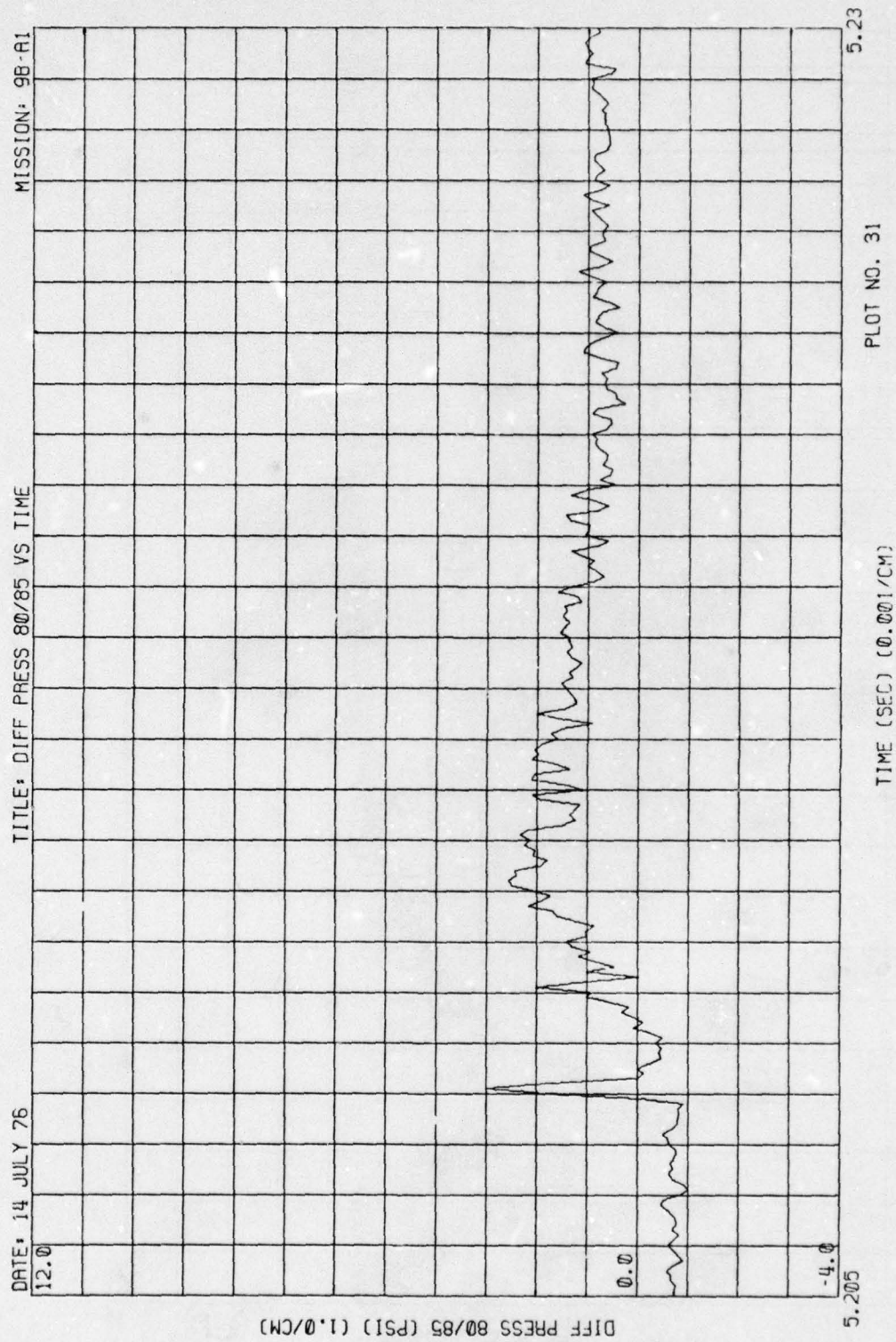


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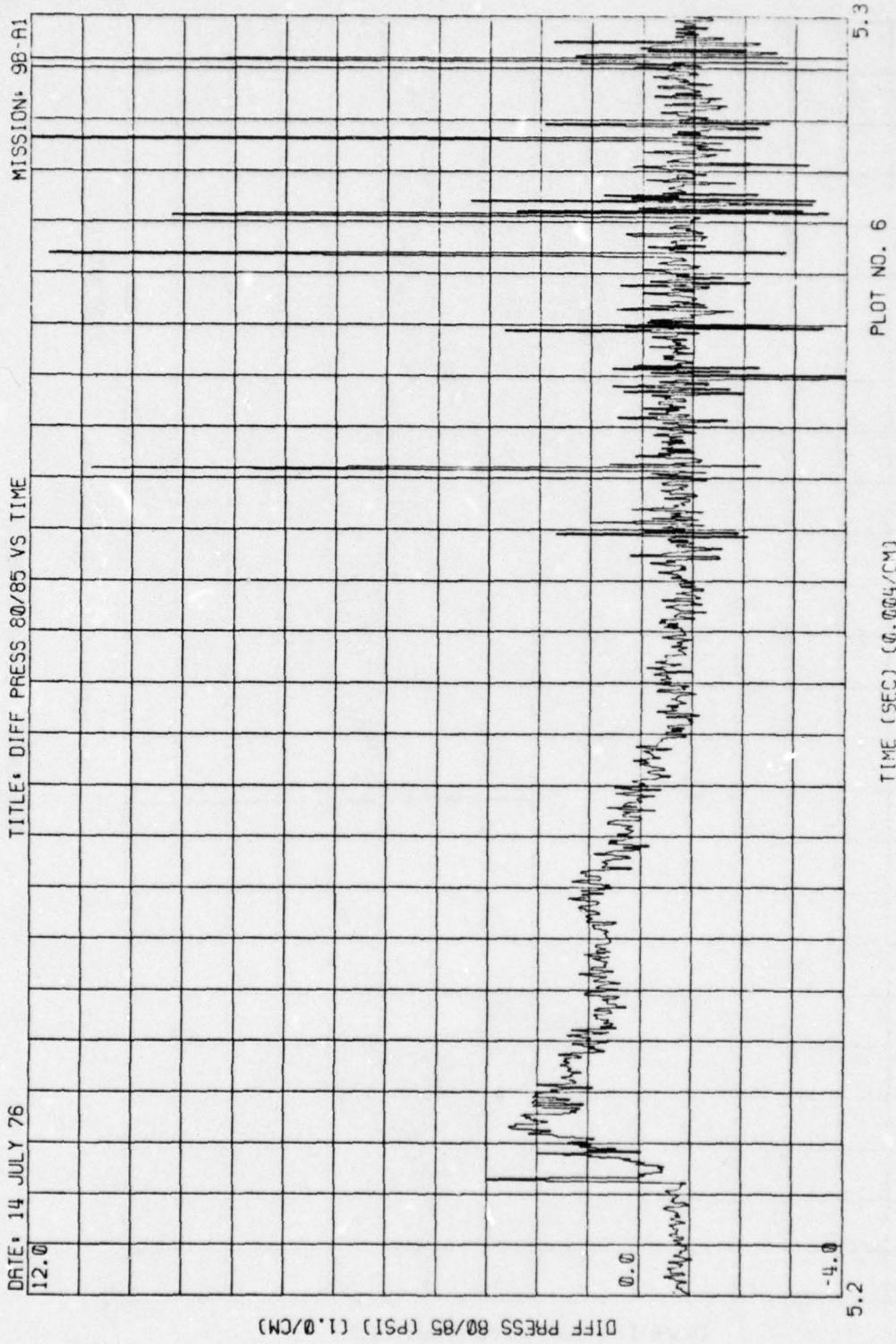


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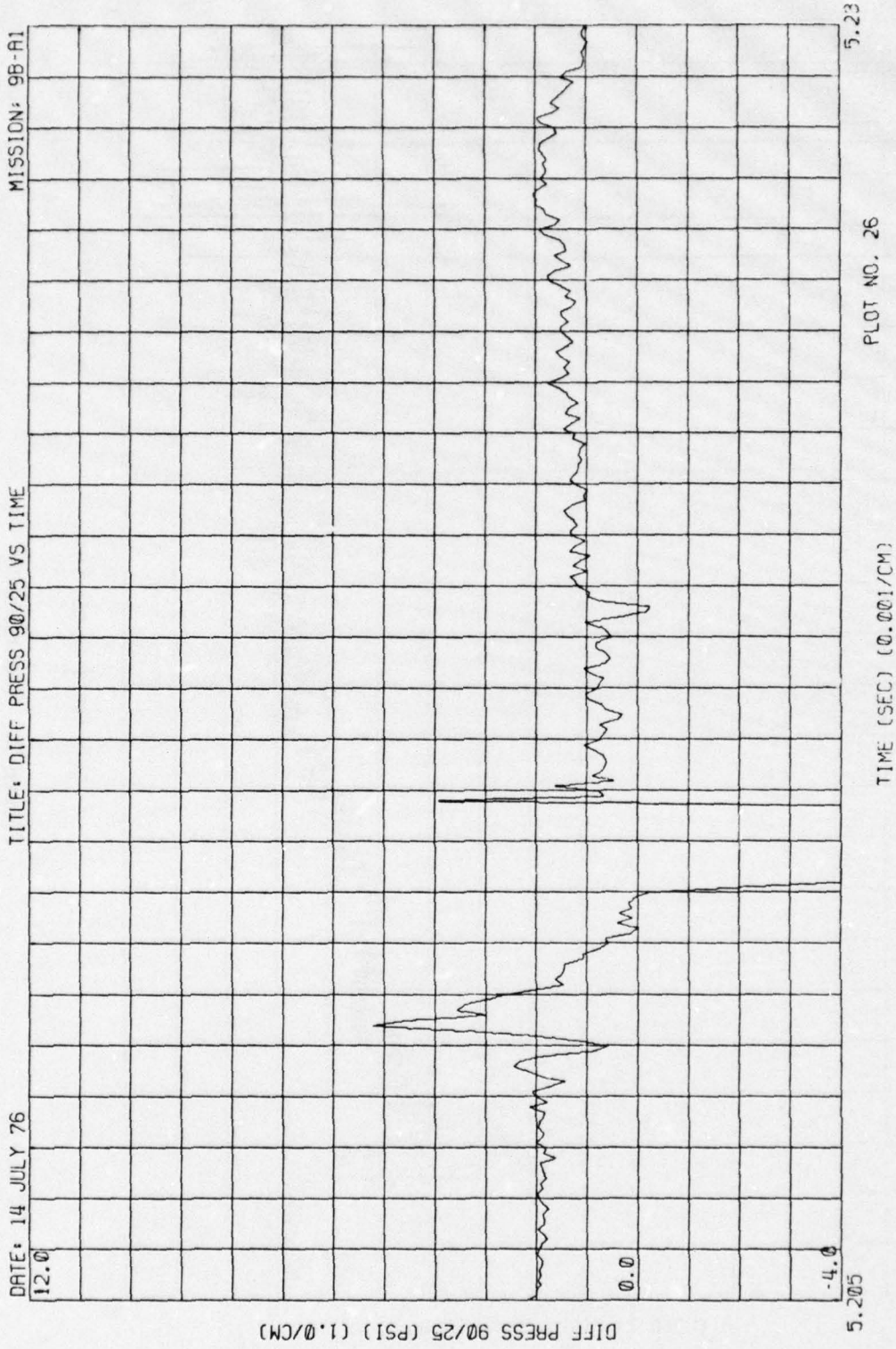


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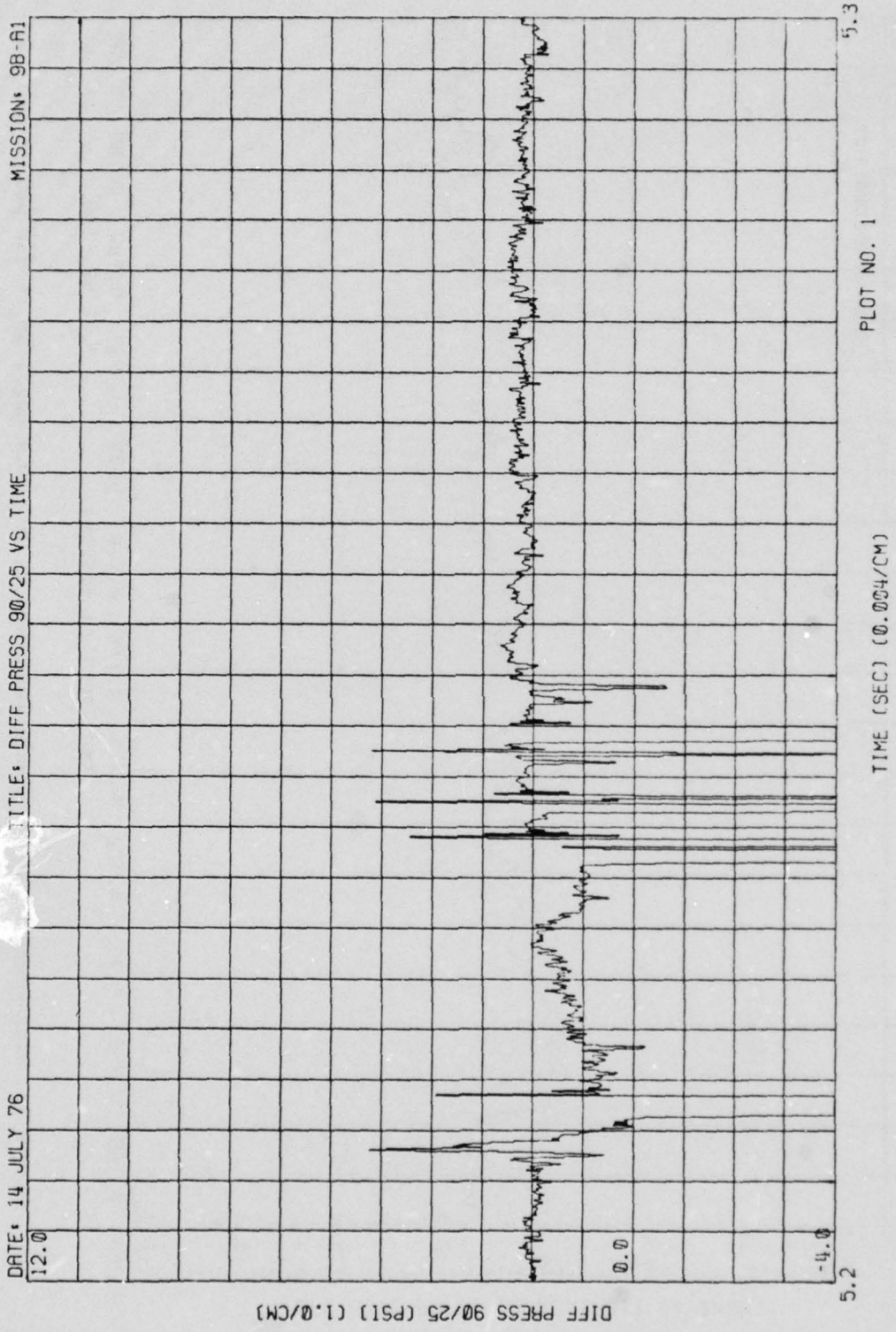


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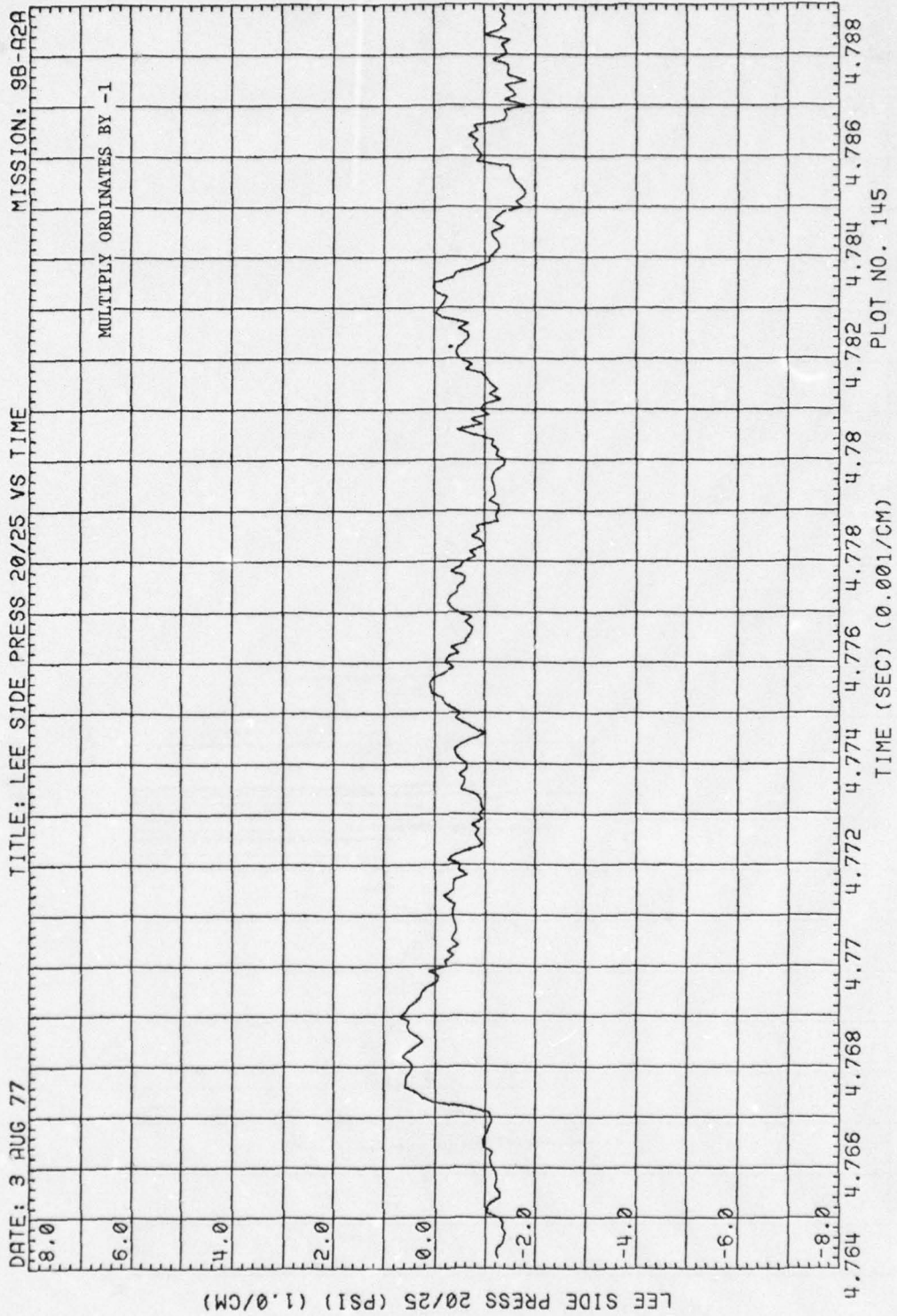


Figure 3. Wing Pressures, Run 9B-A2, Intercept 1, $\phi = 20.1$ deg., $\Delta p_s = 2.0$ psi.

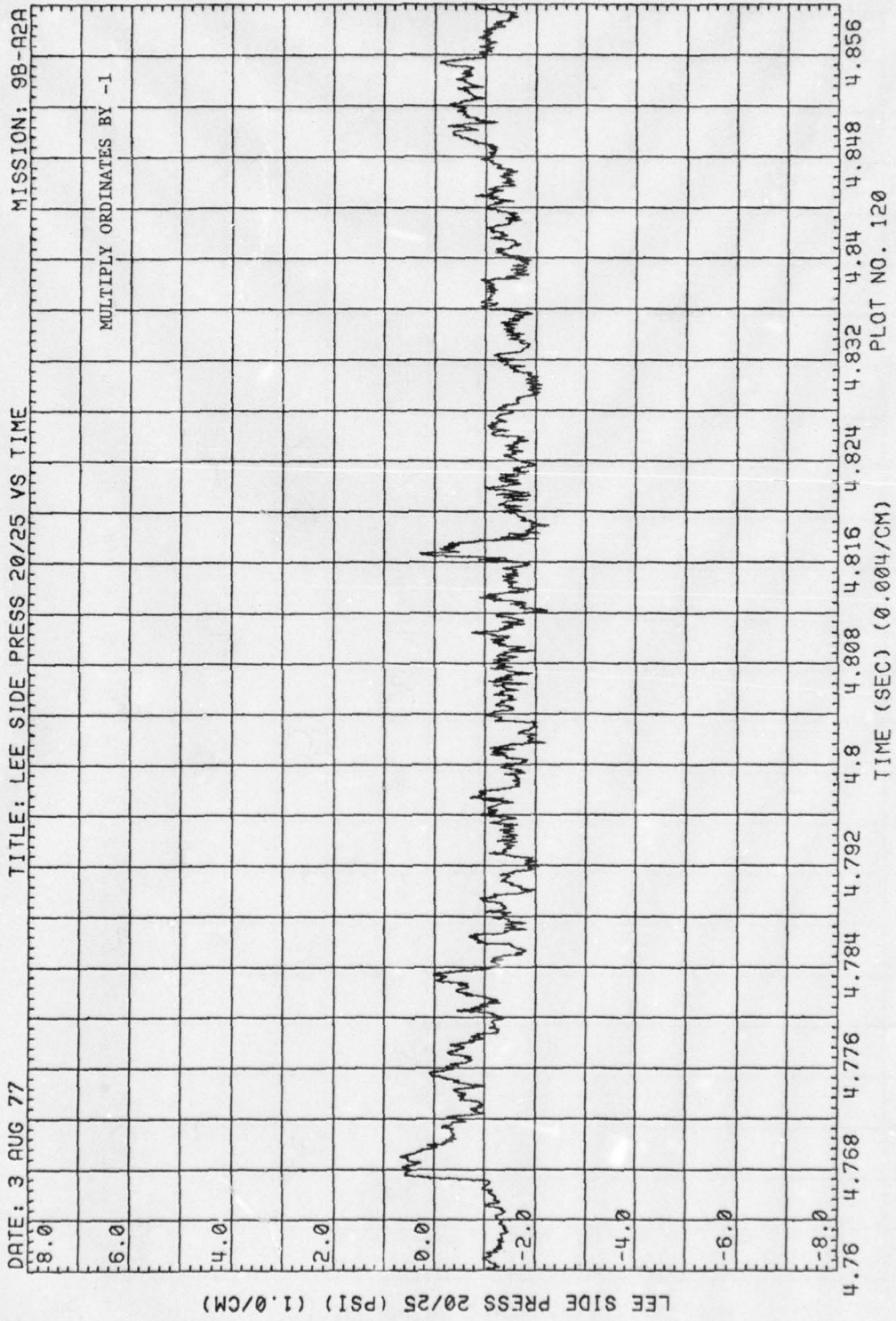


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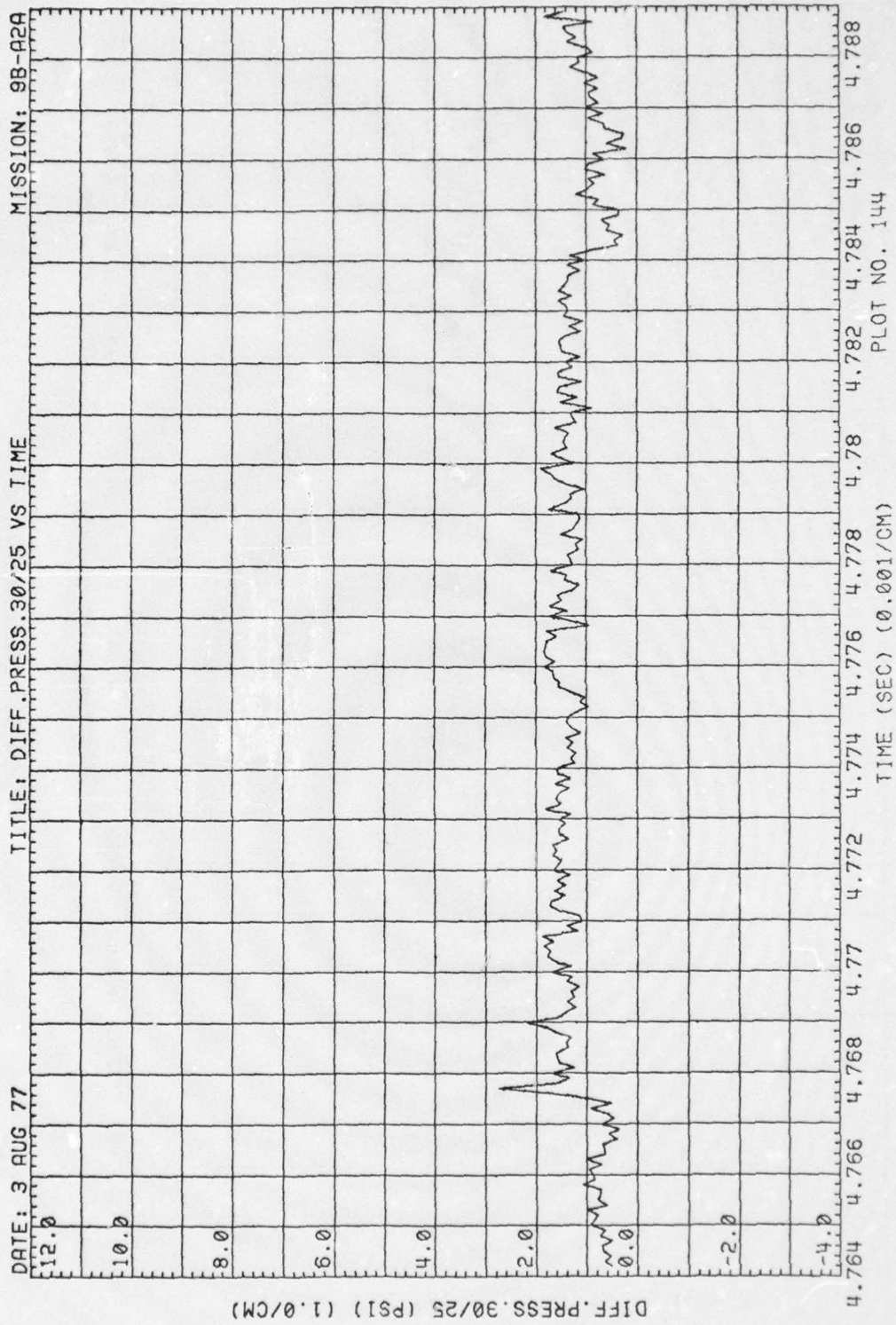


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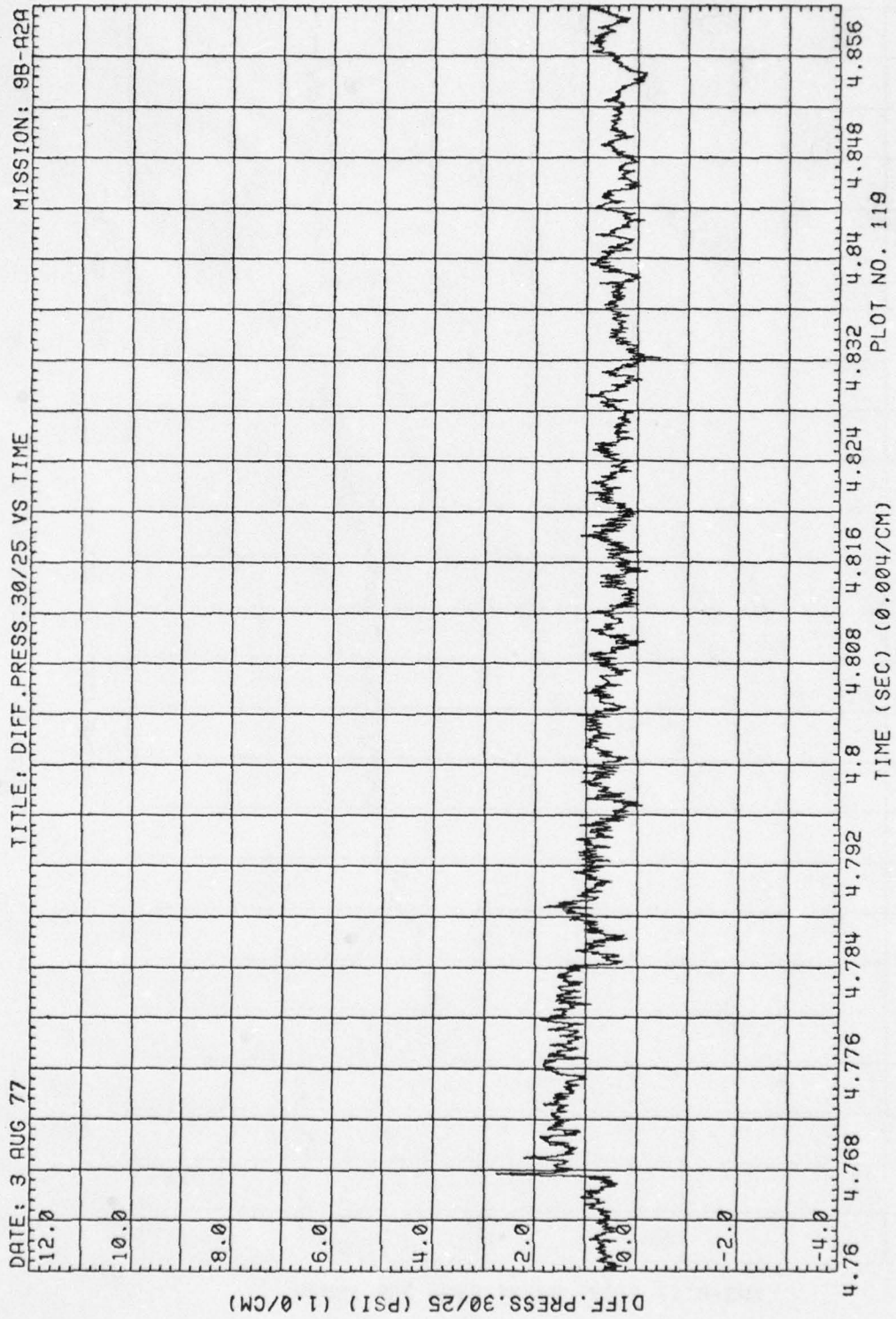


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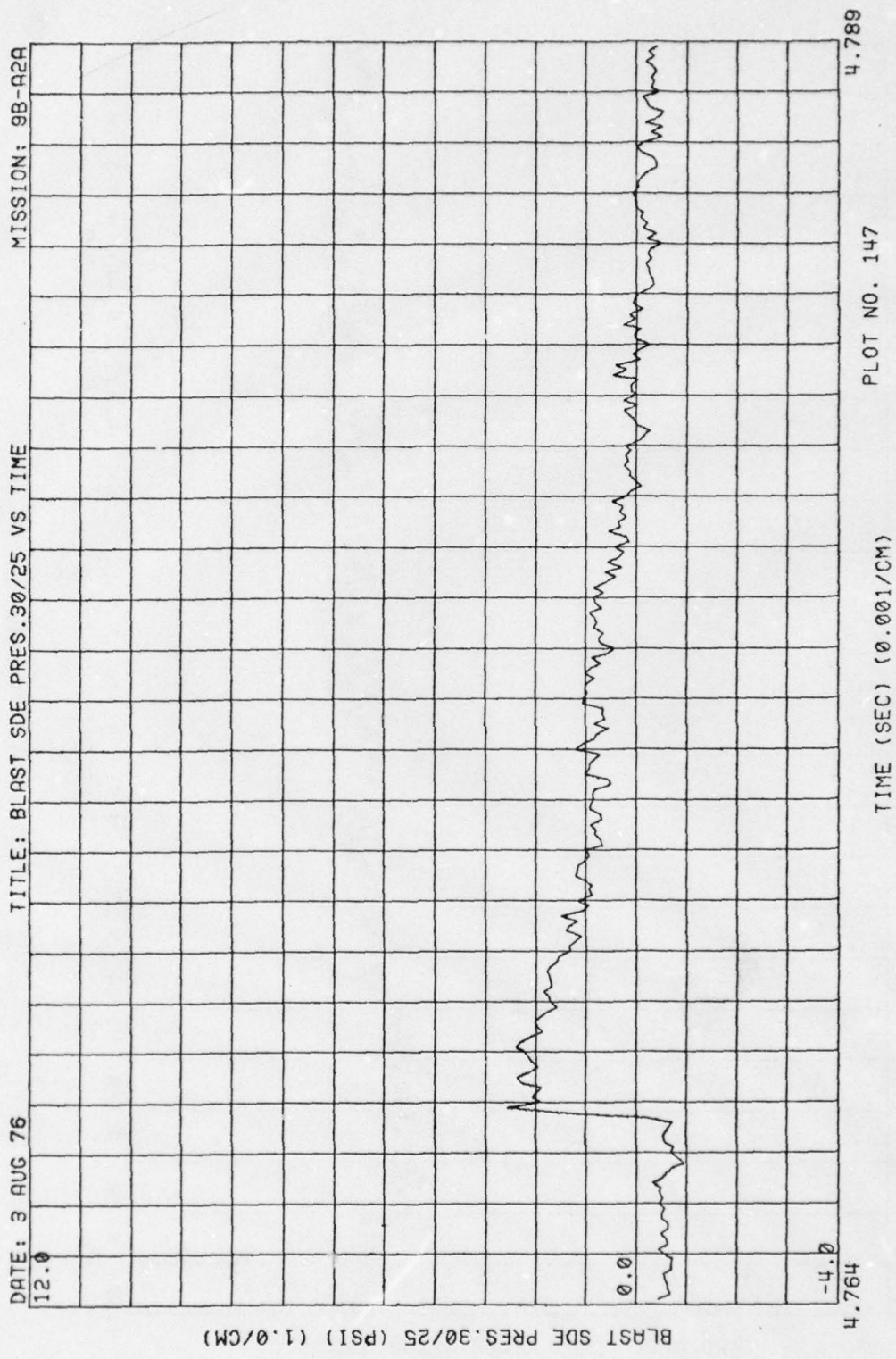


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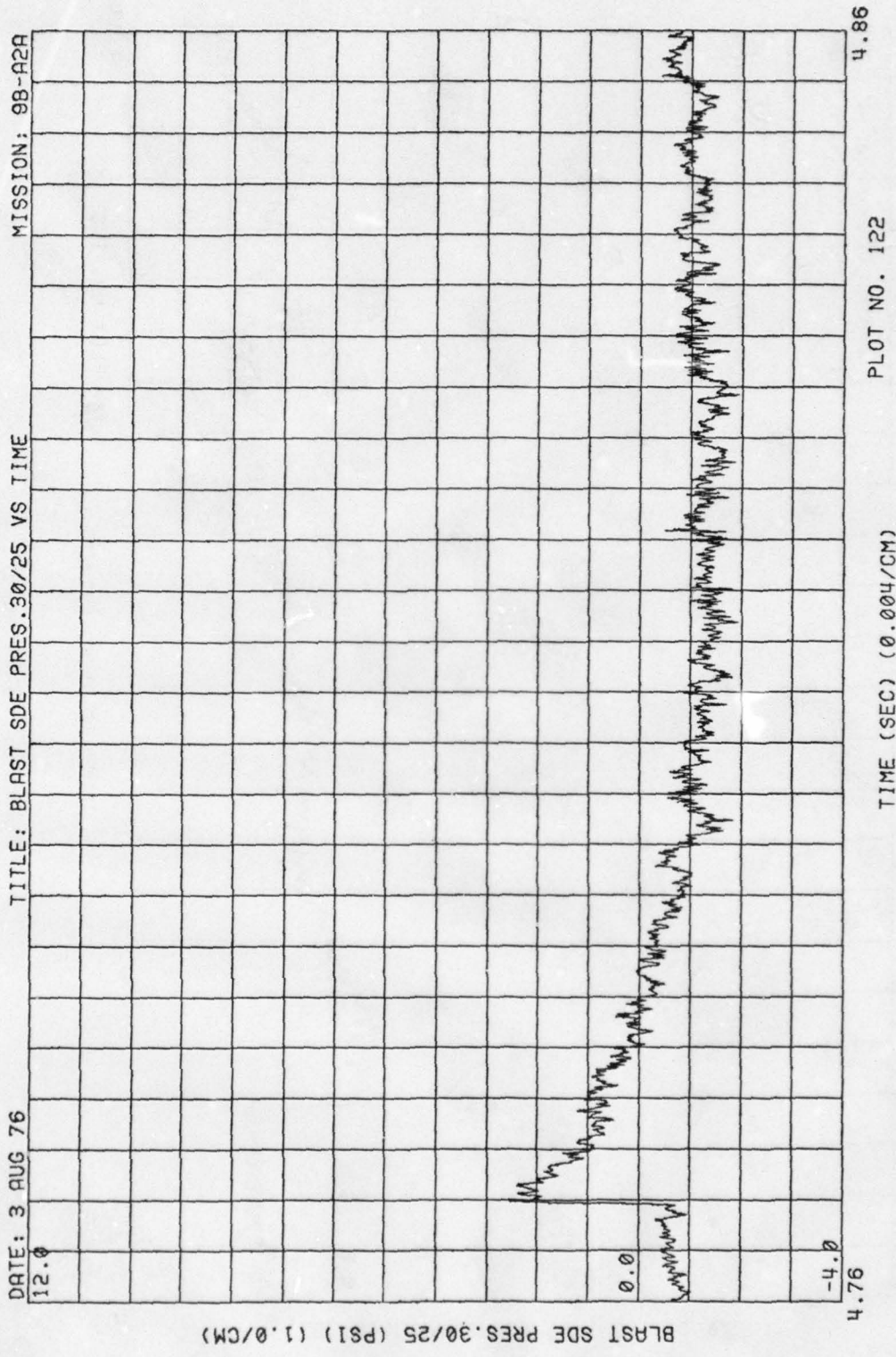


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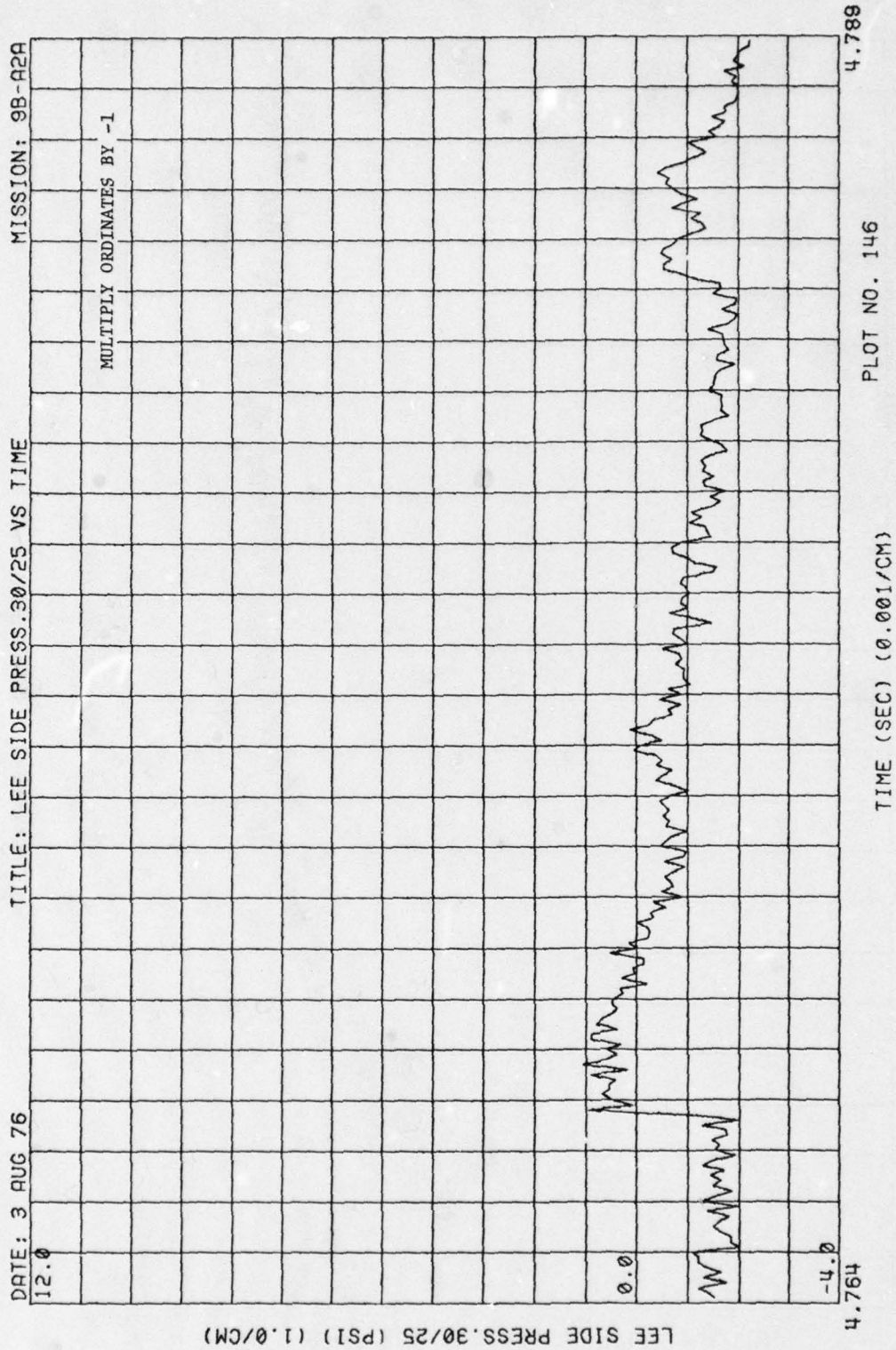


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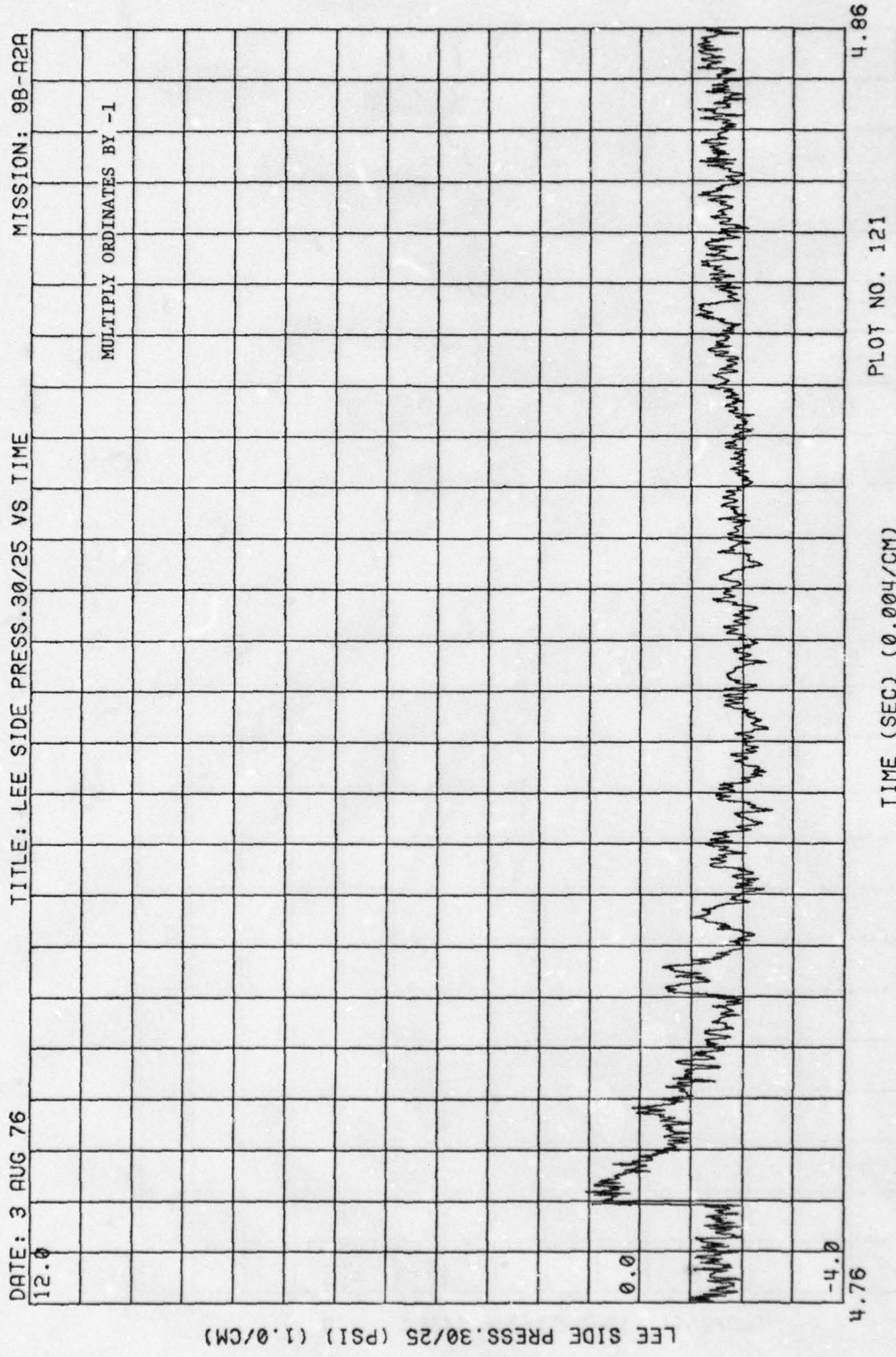


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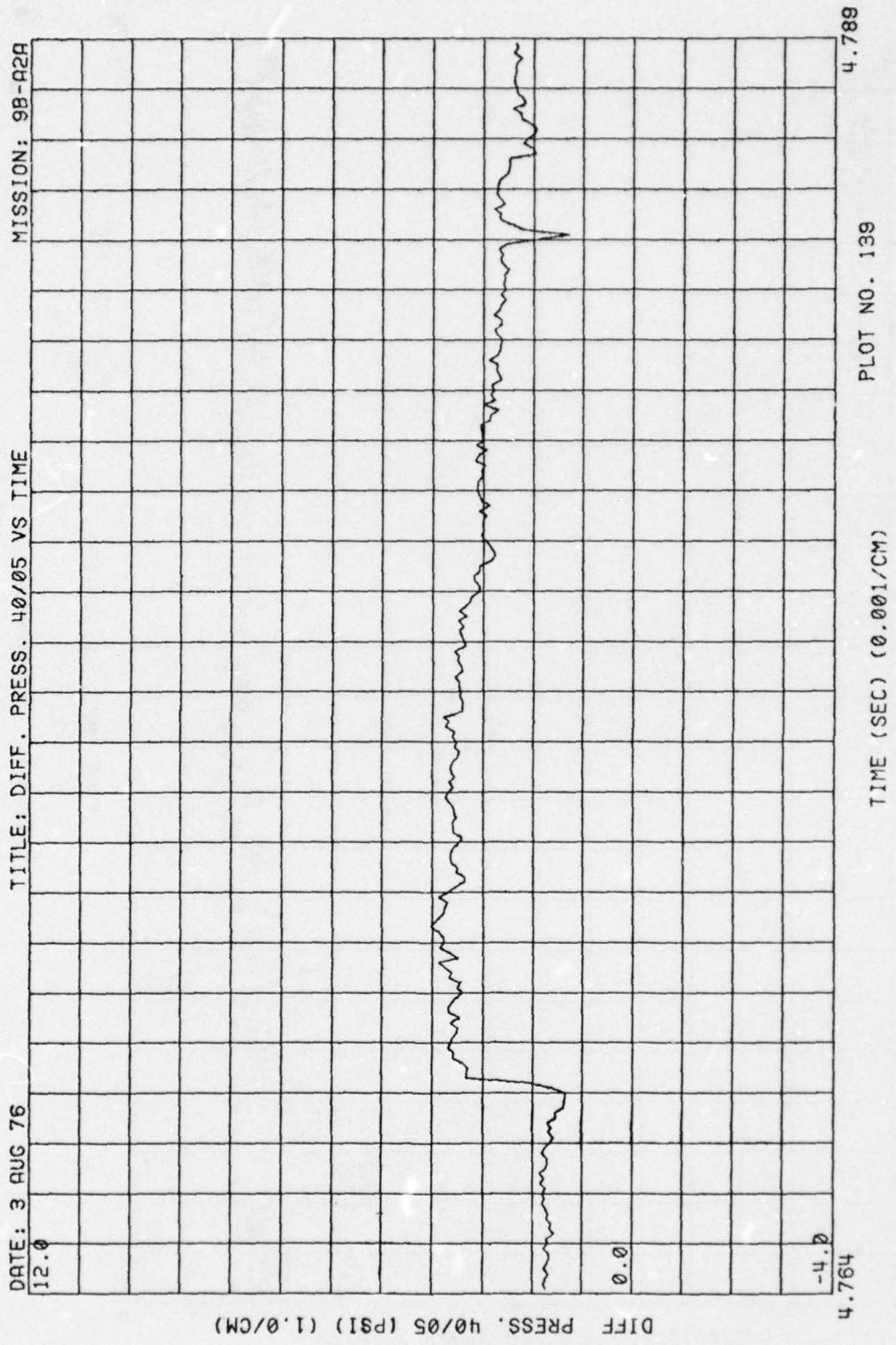


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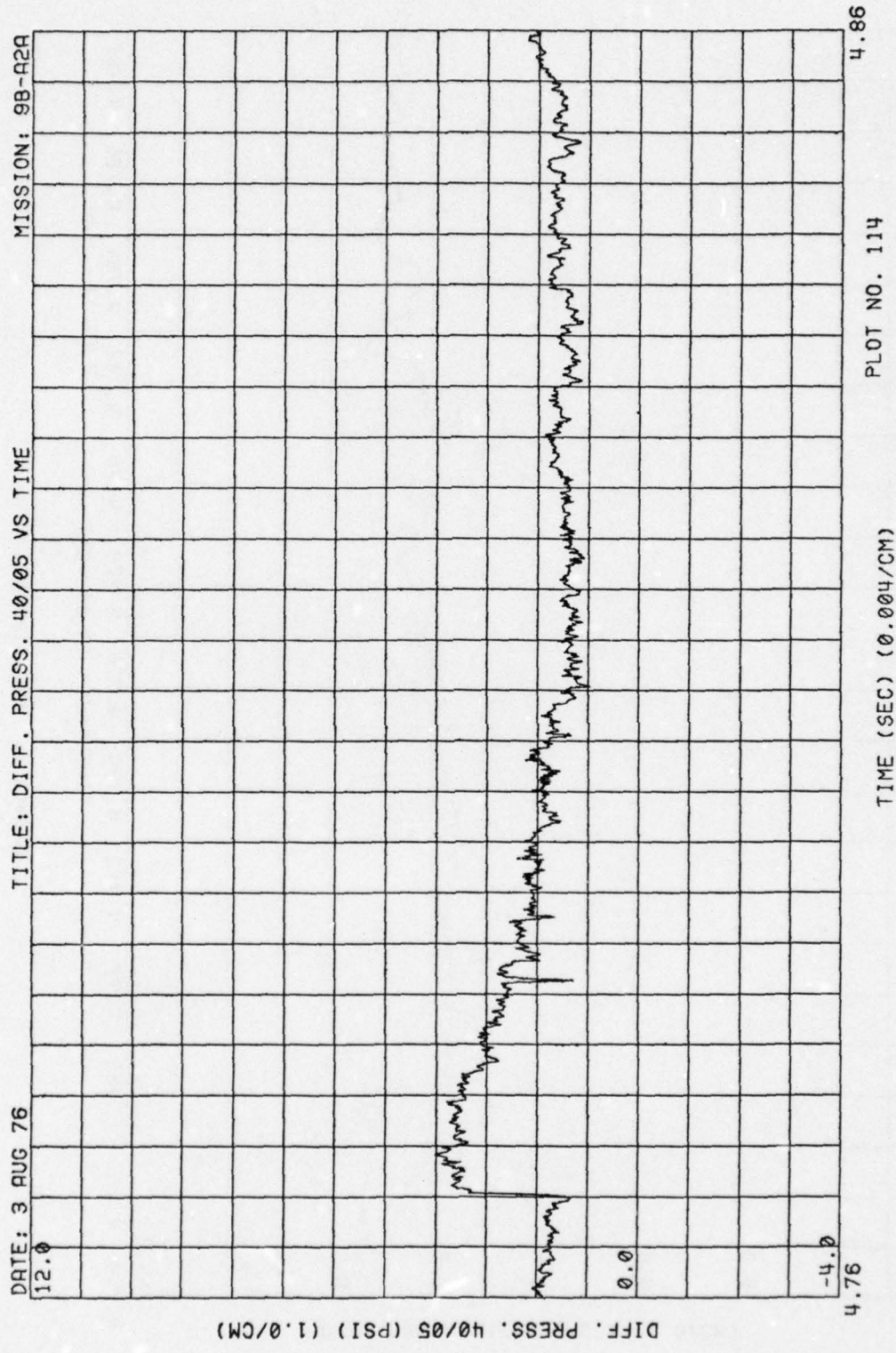


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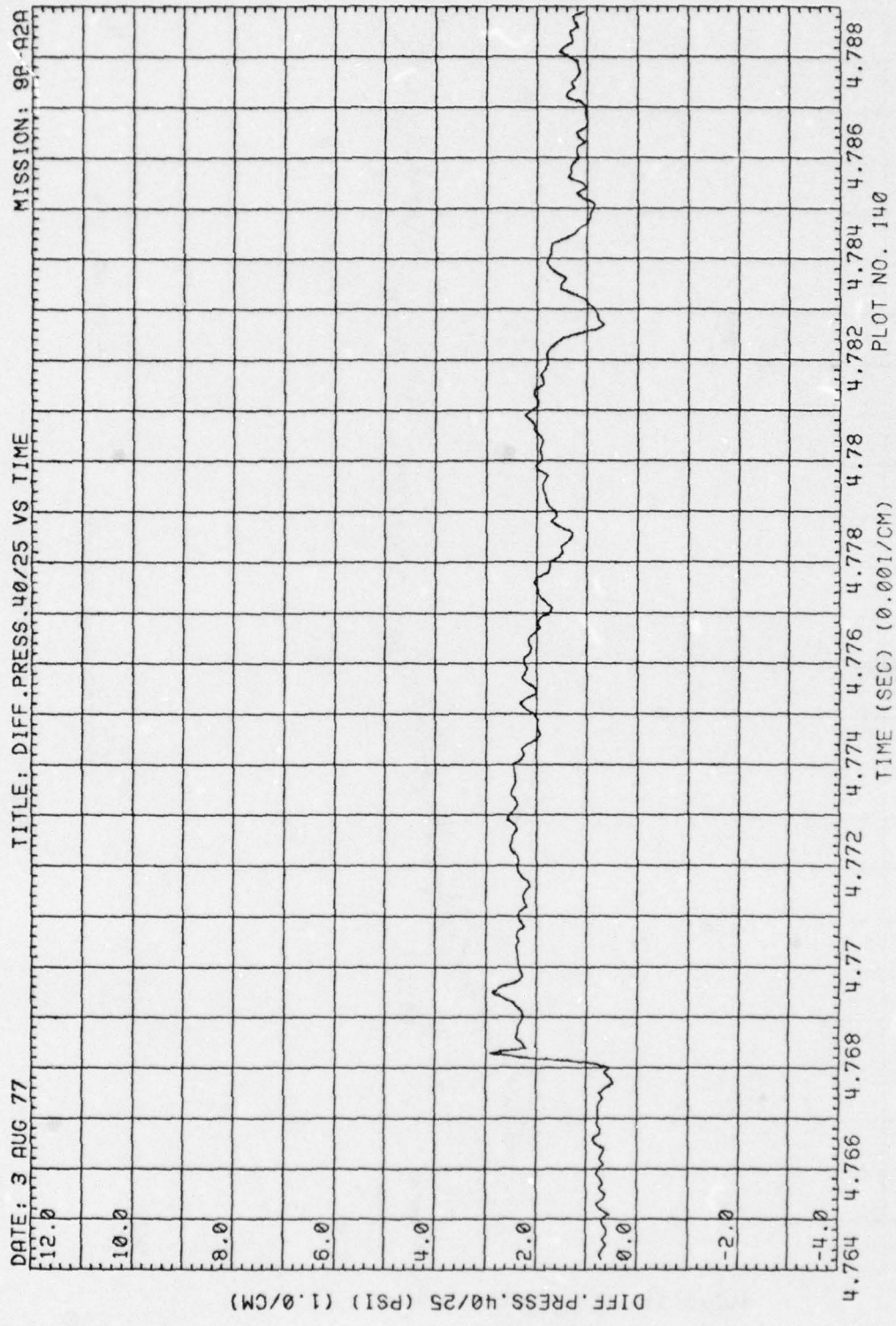


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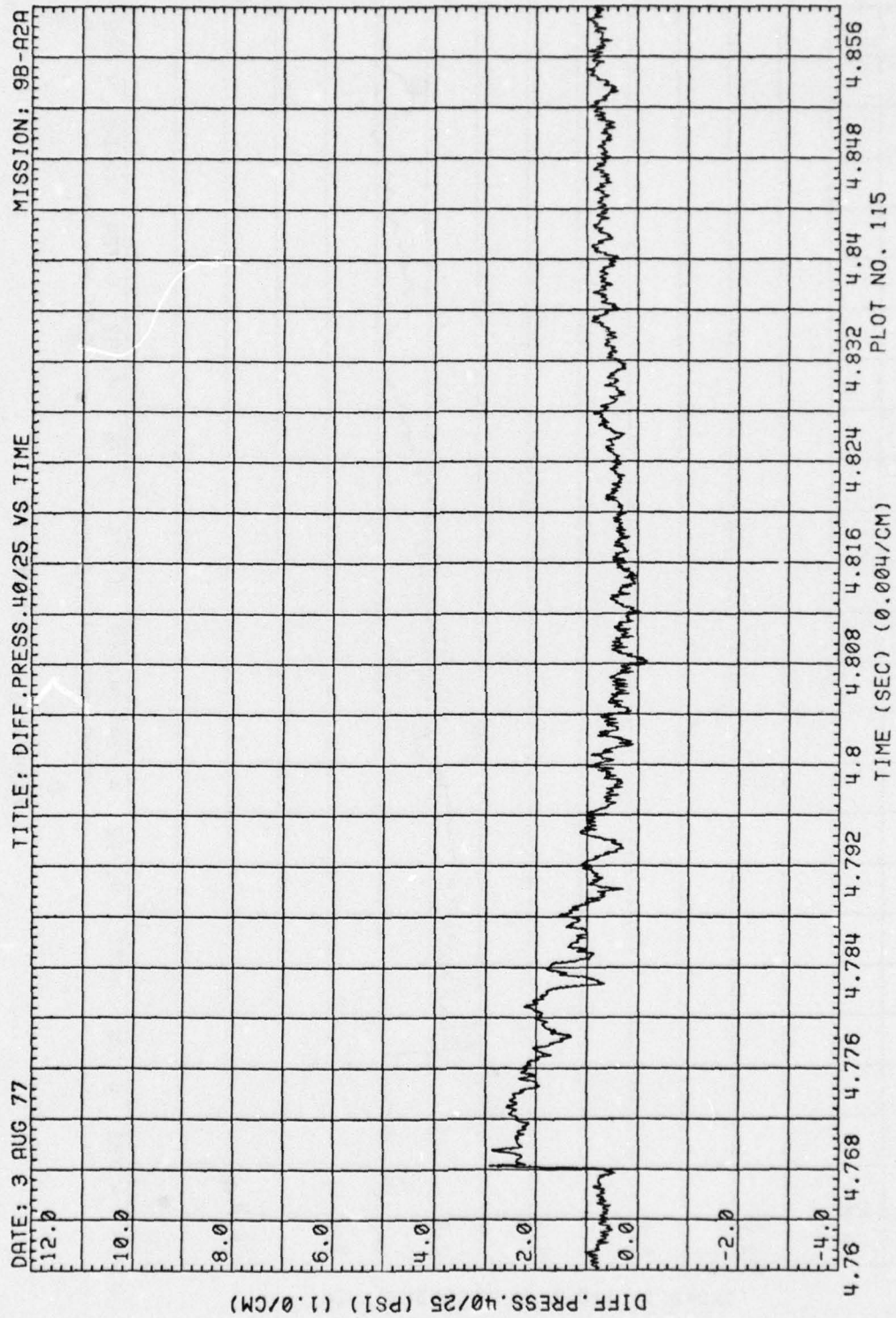


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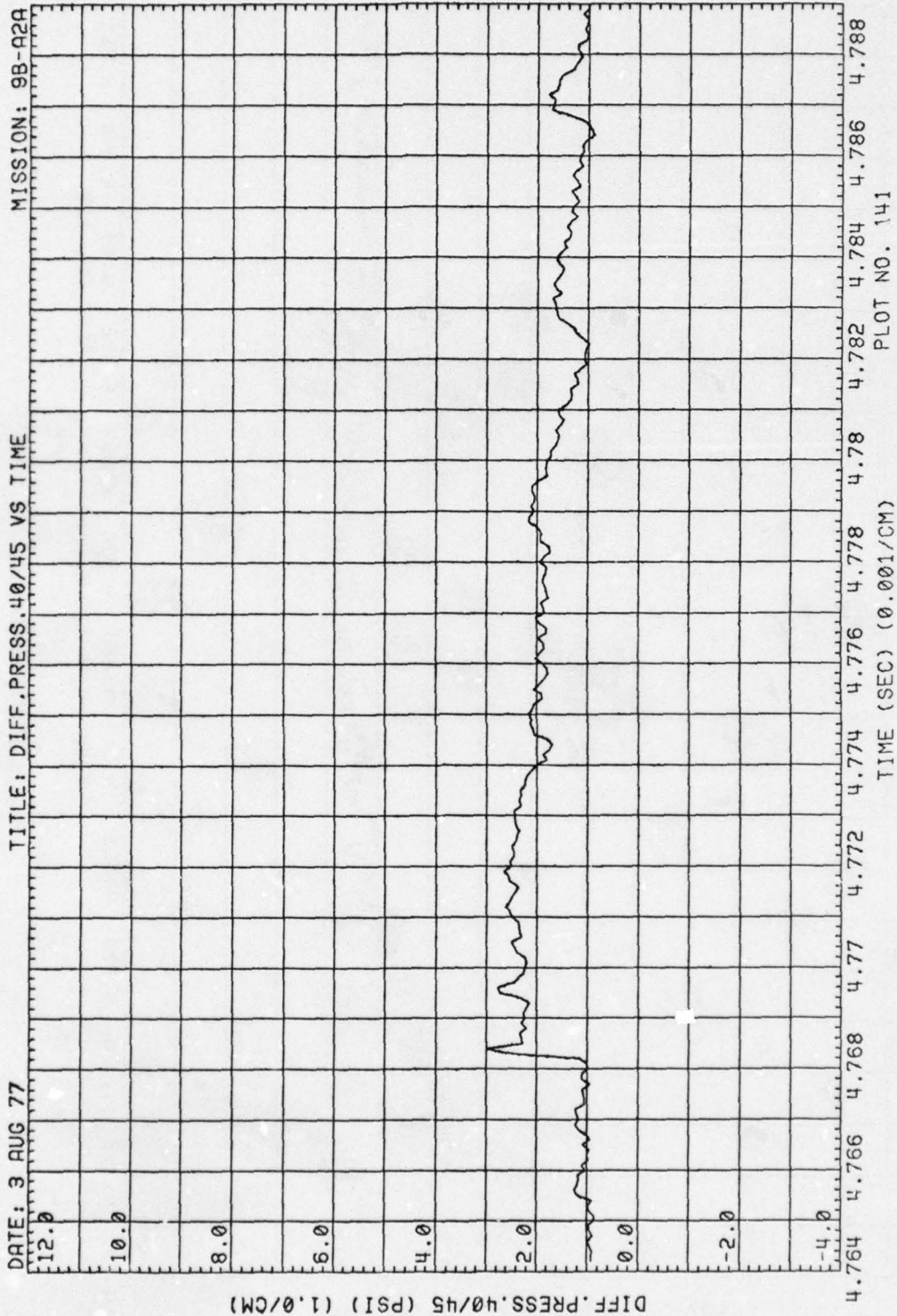


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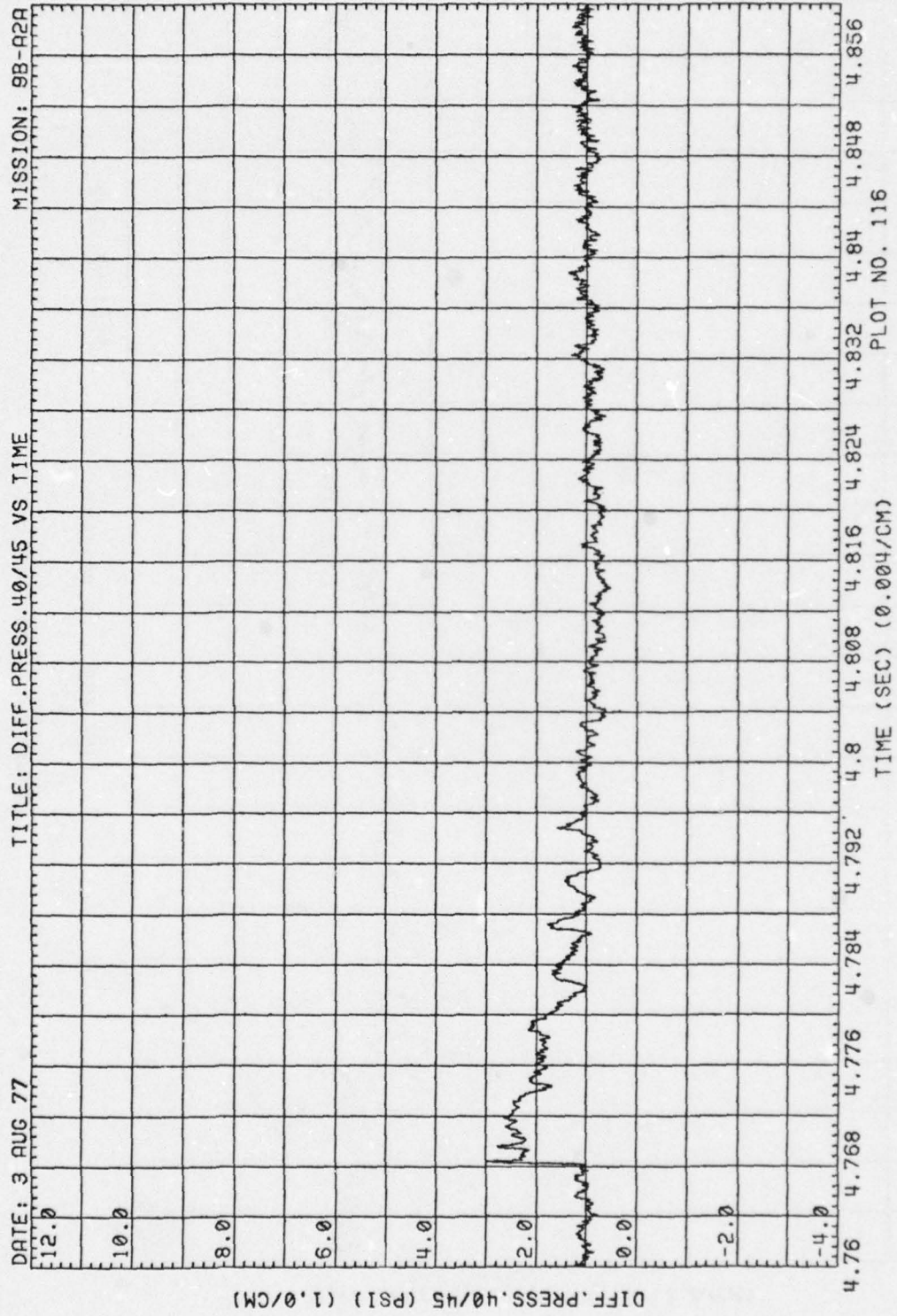


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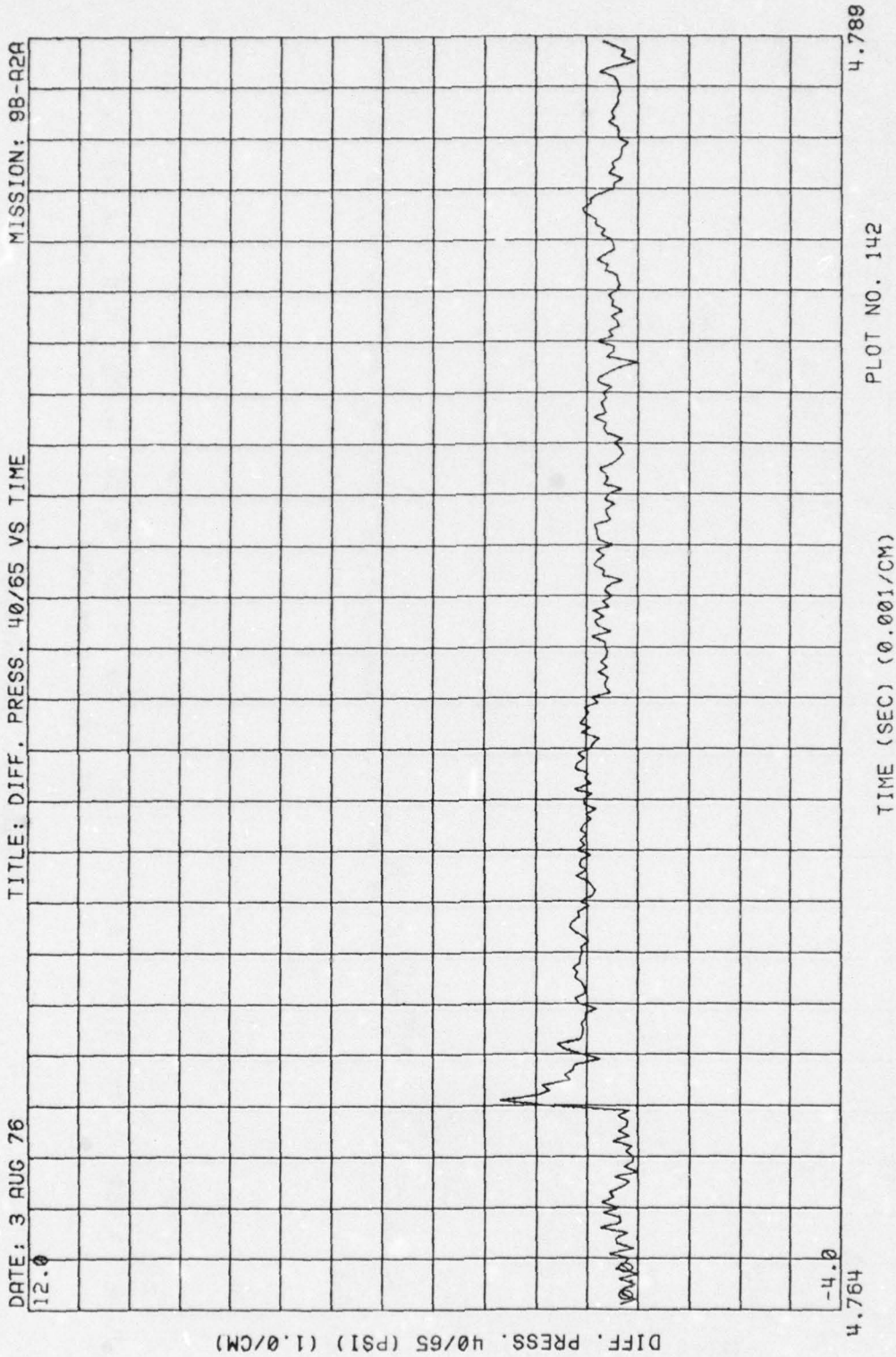


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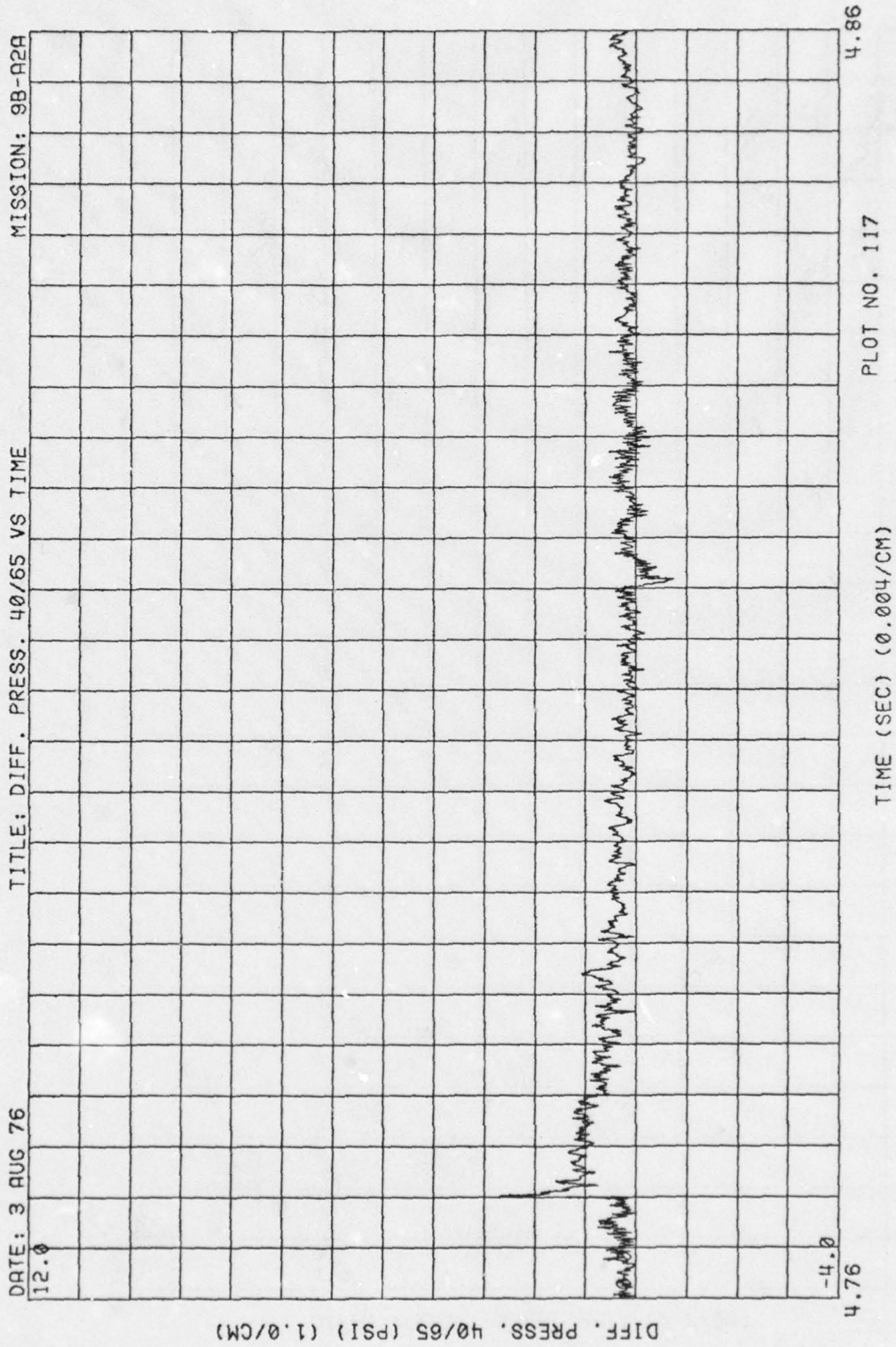


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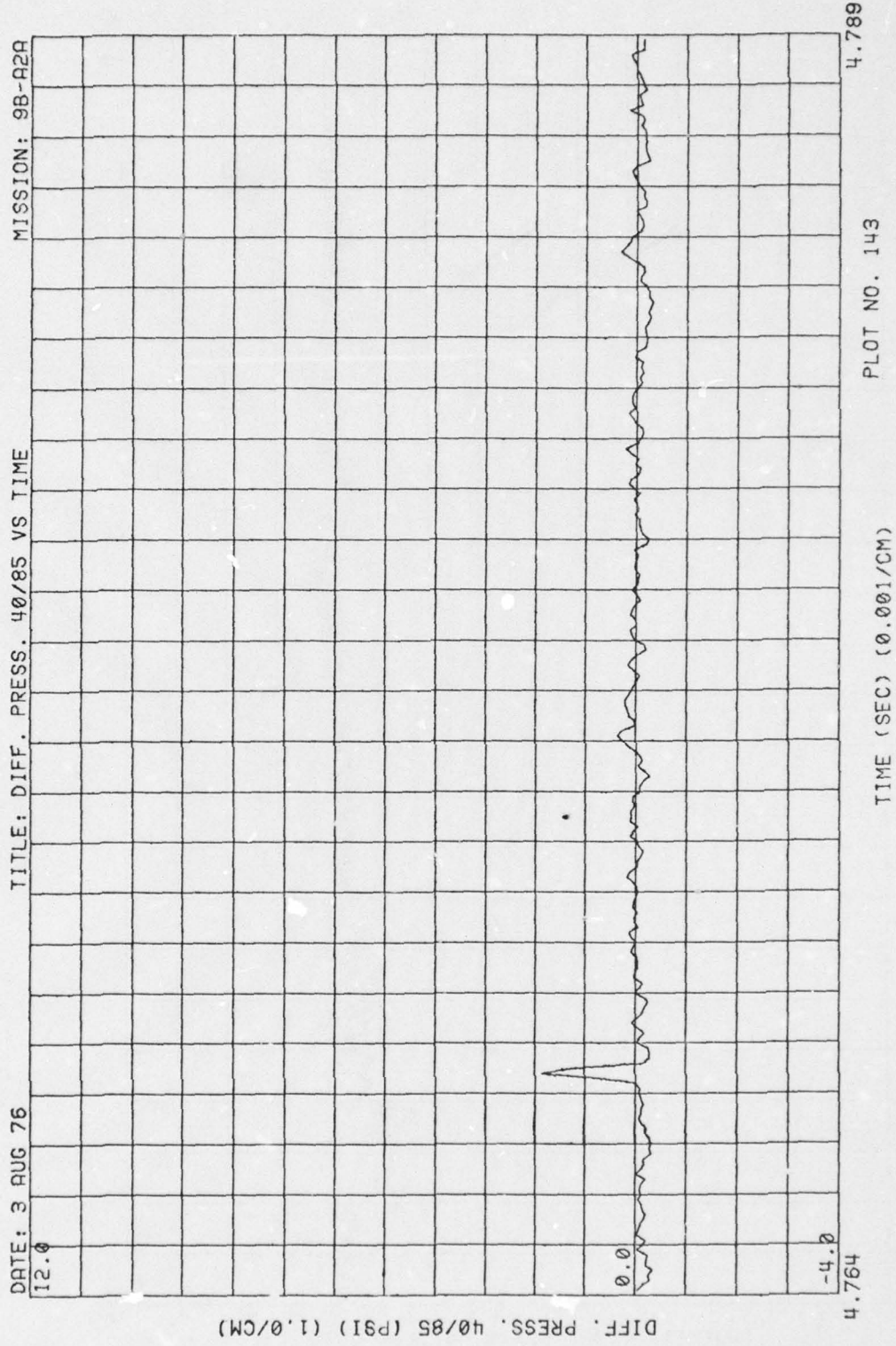


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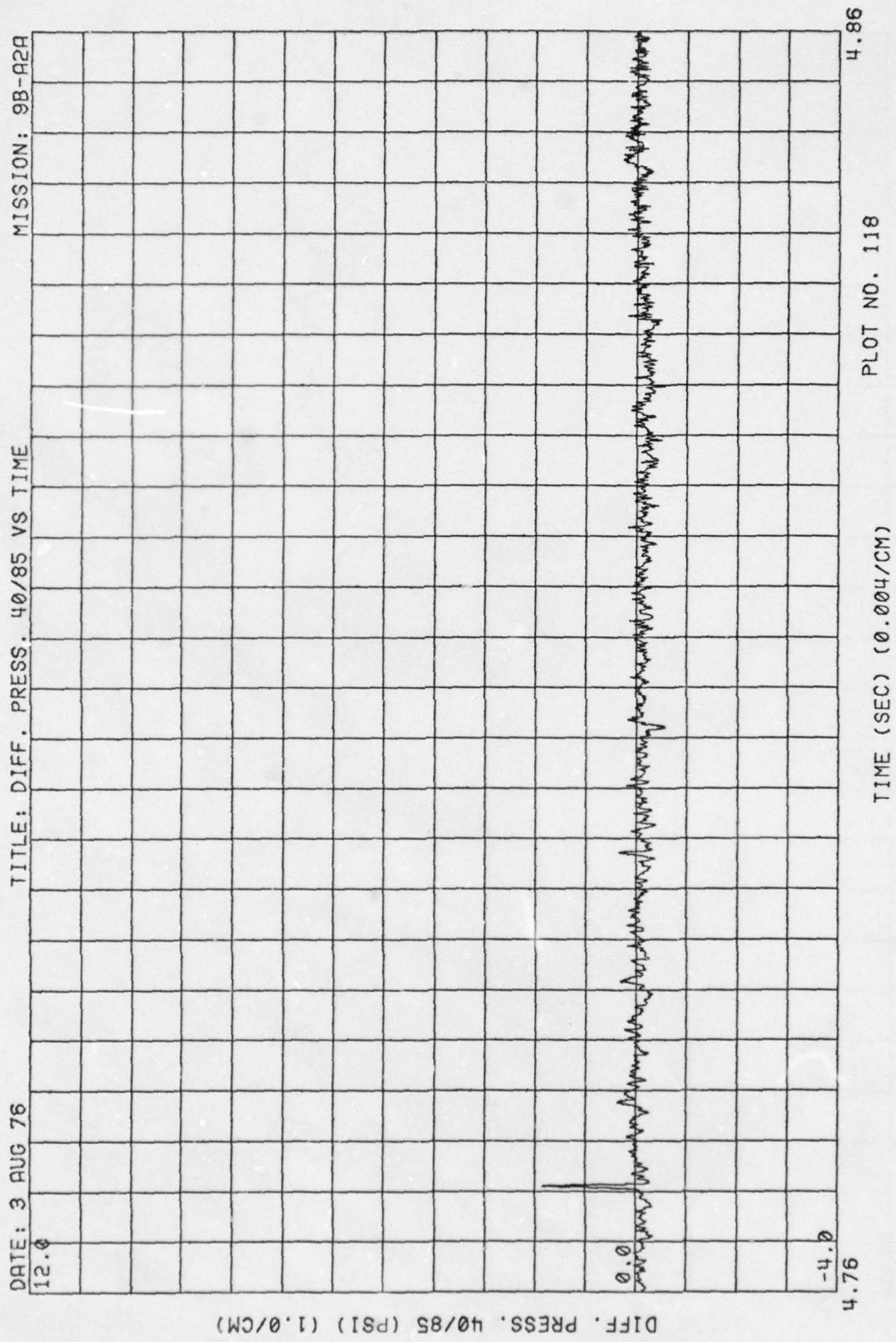


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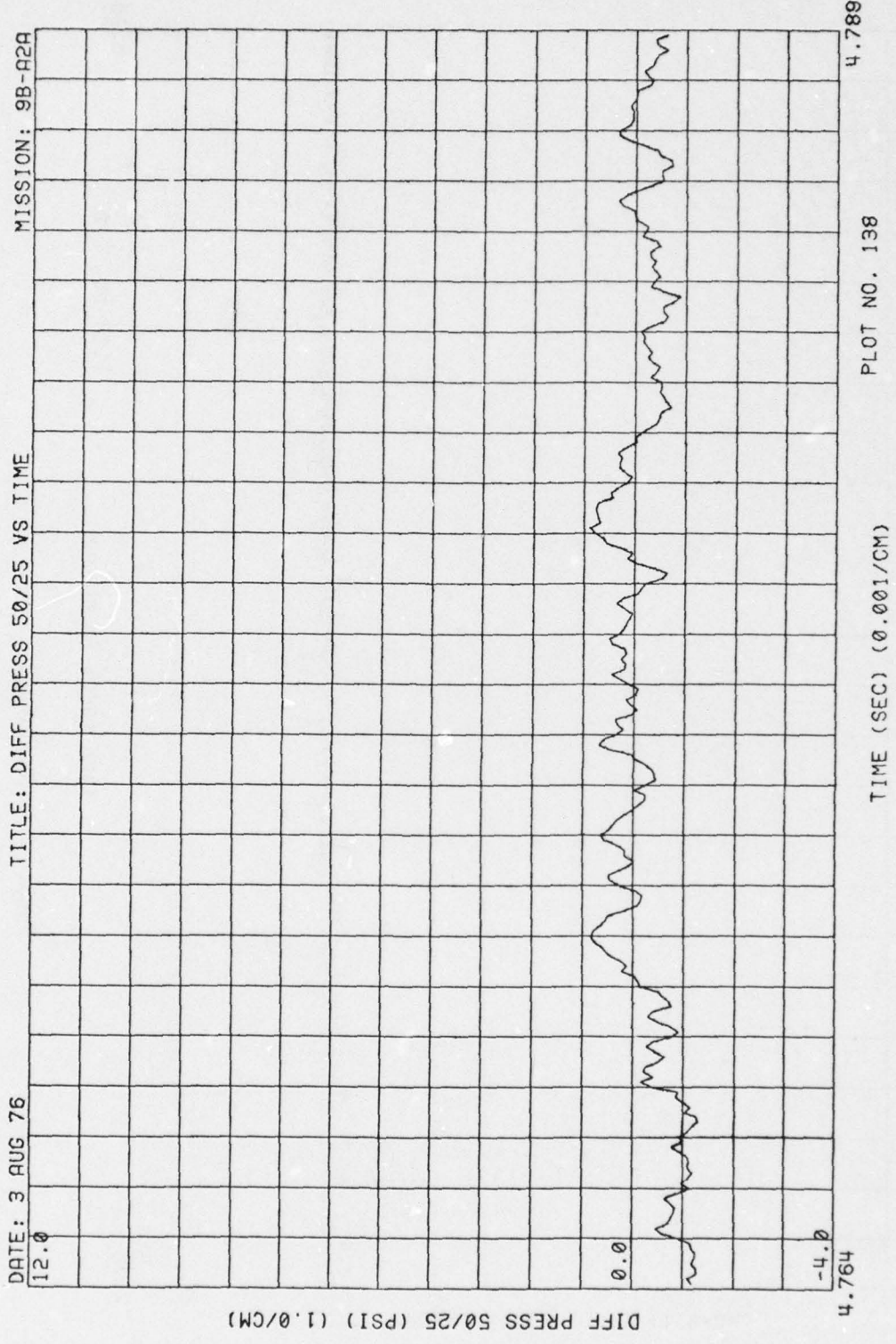


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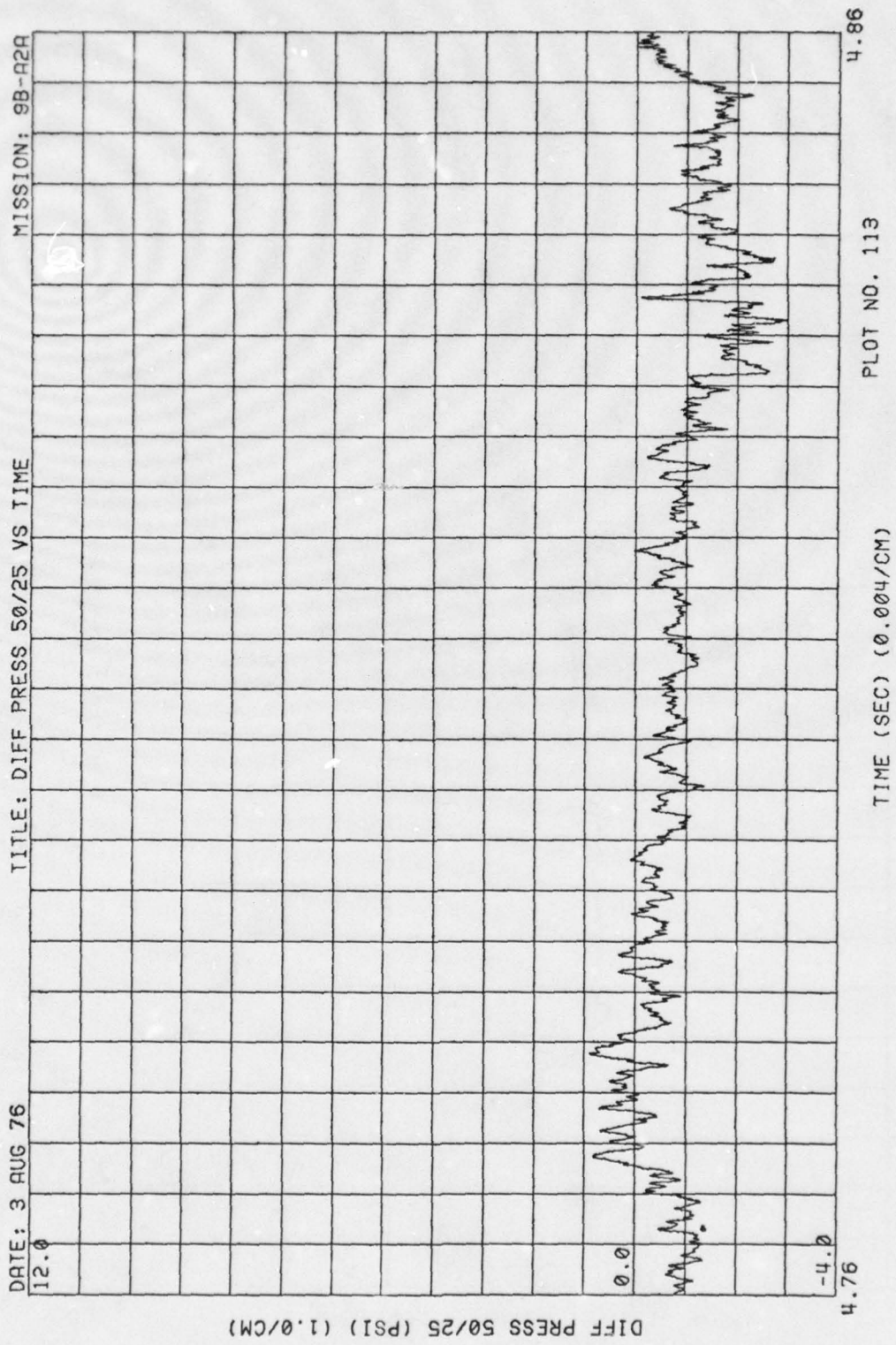


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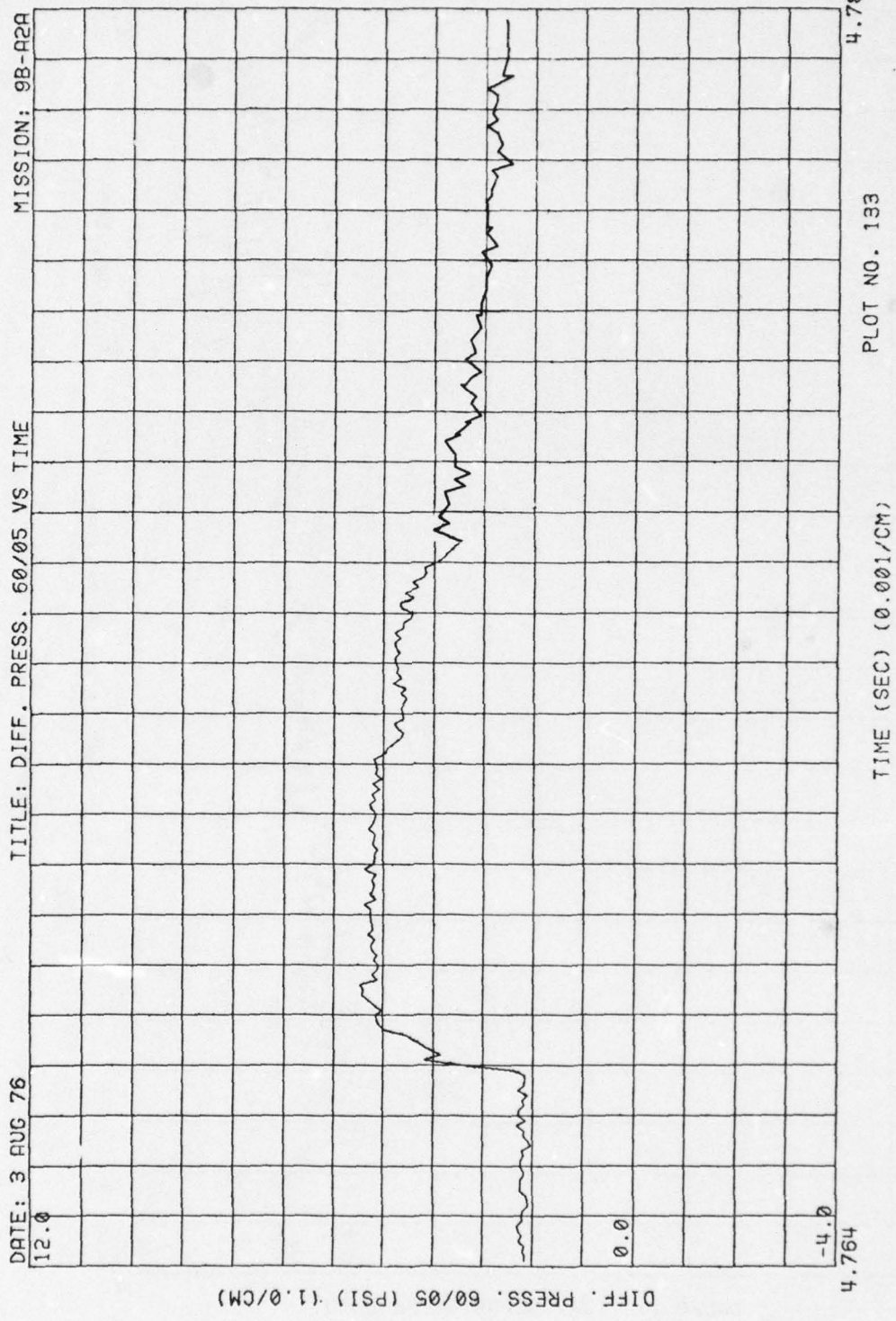


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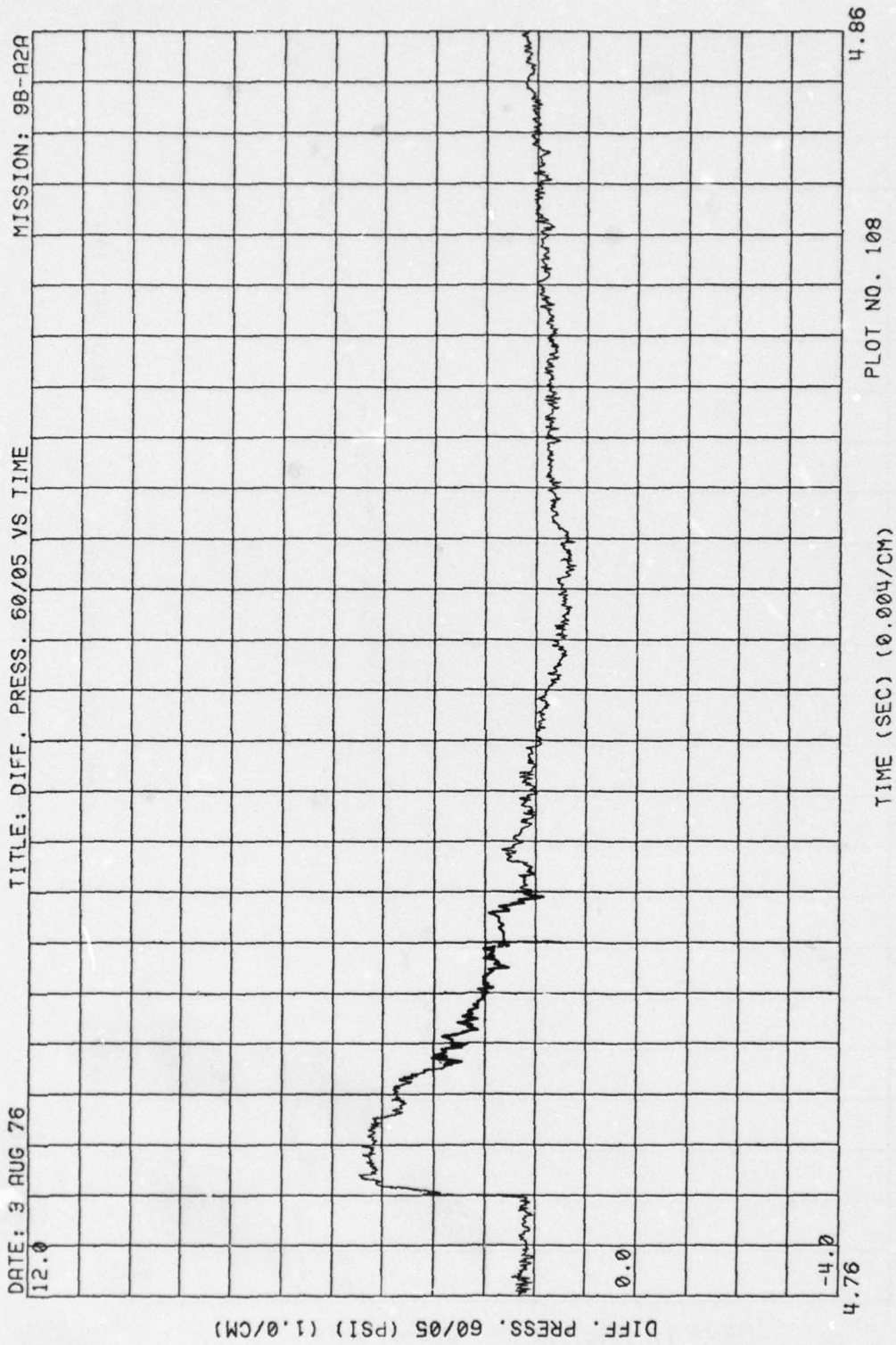


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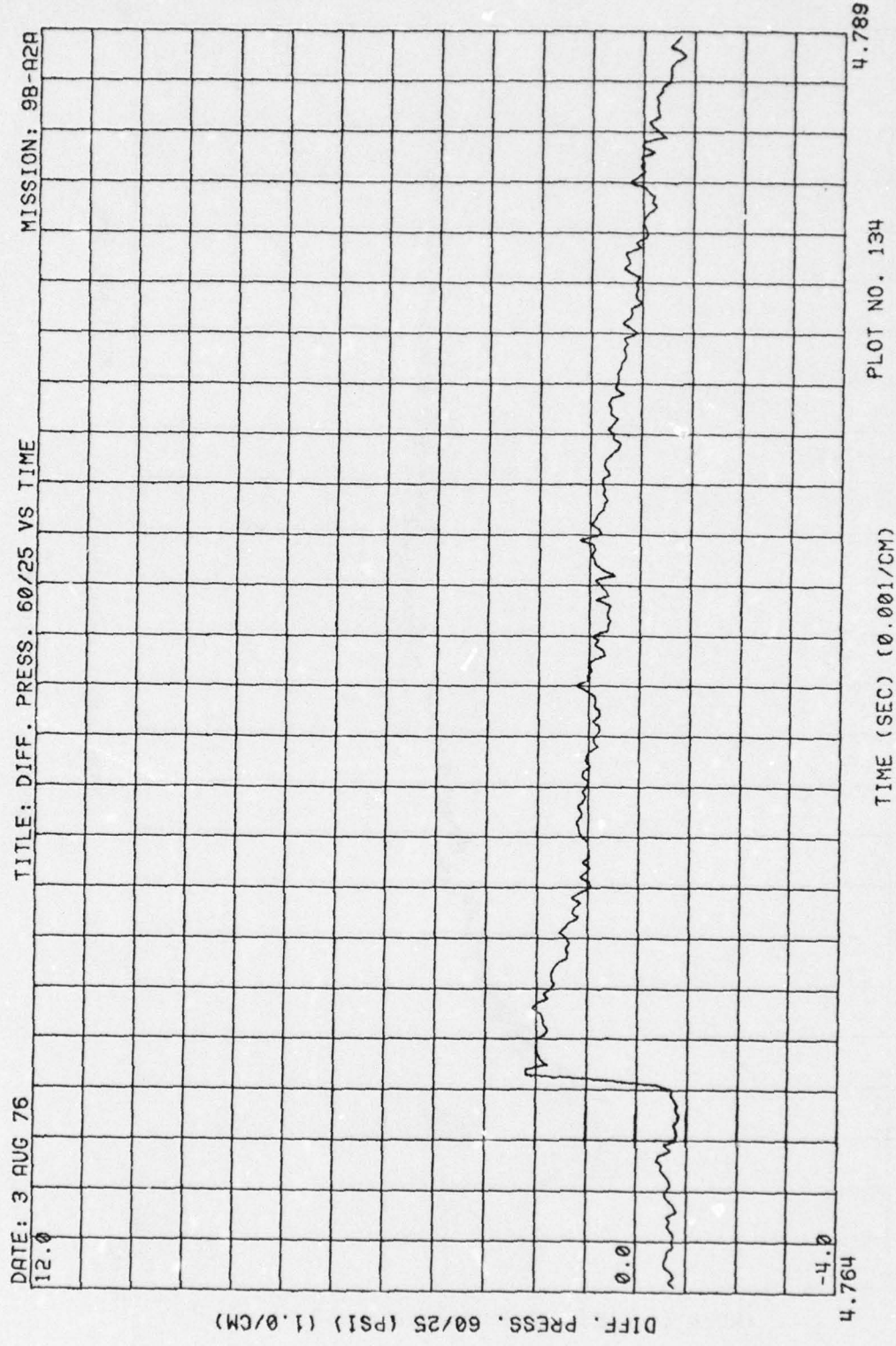


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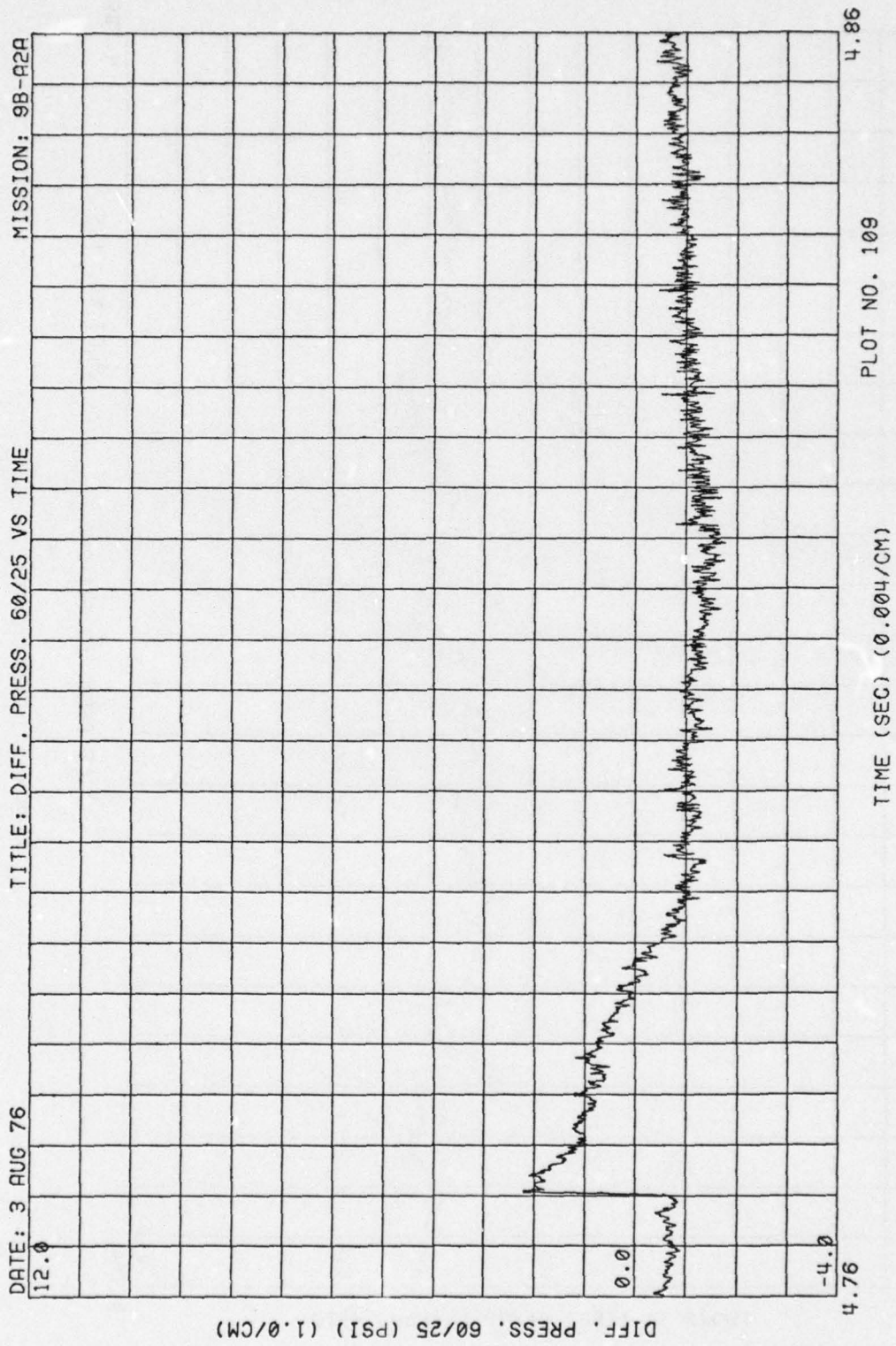


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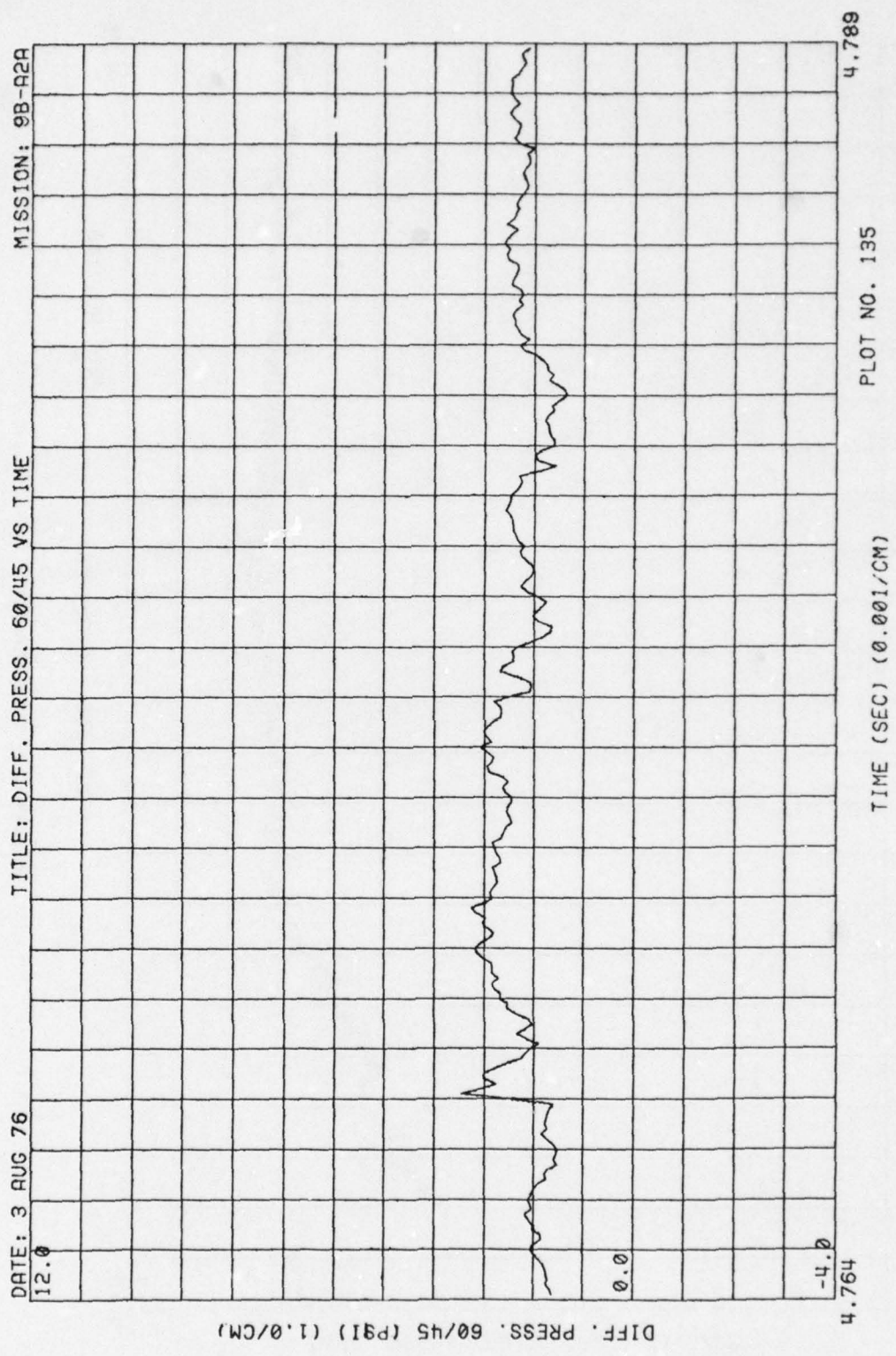


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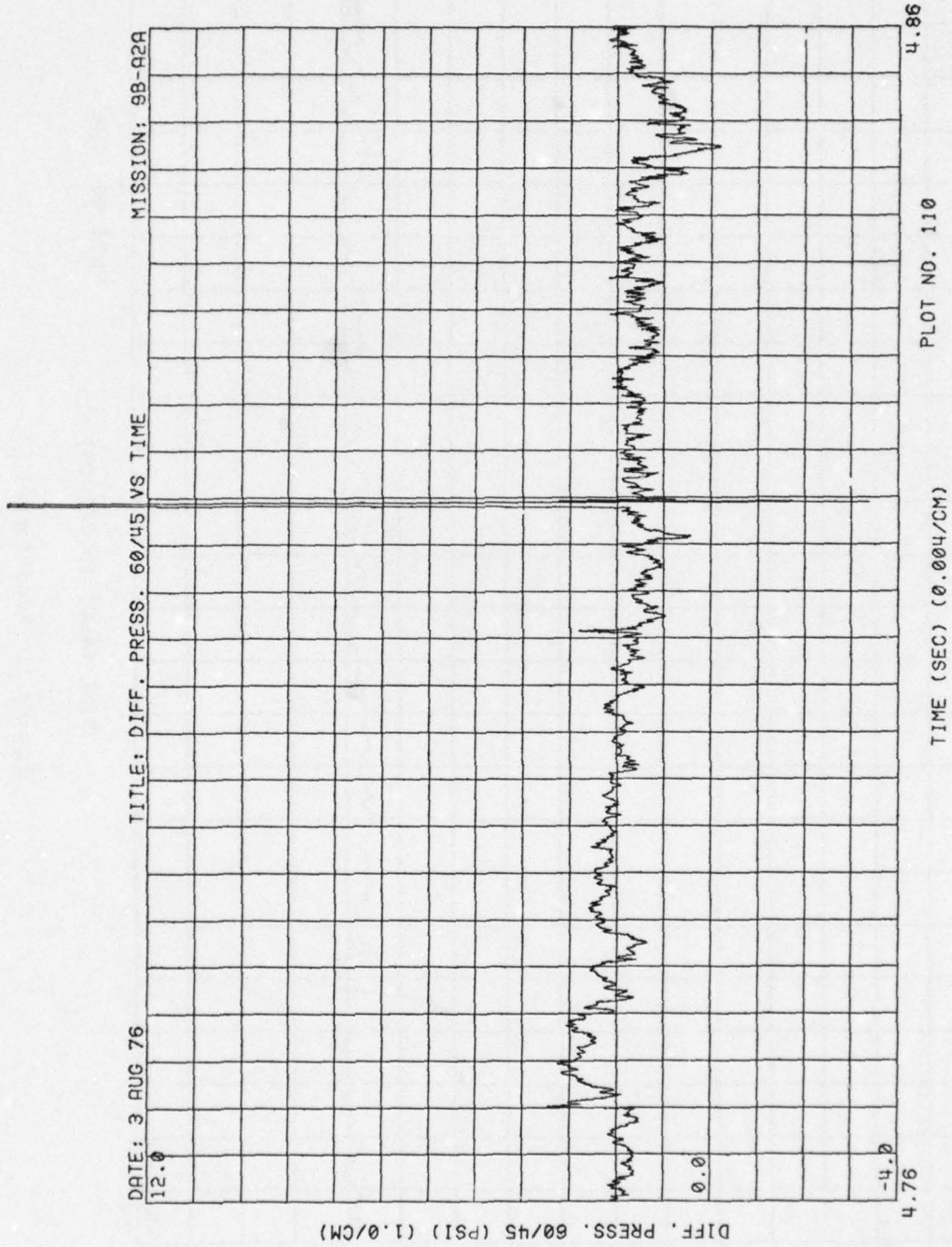


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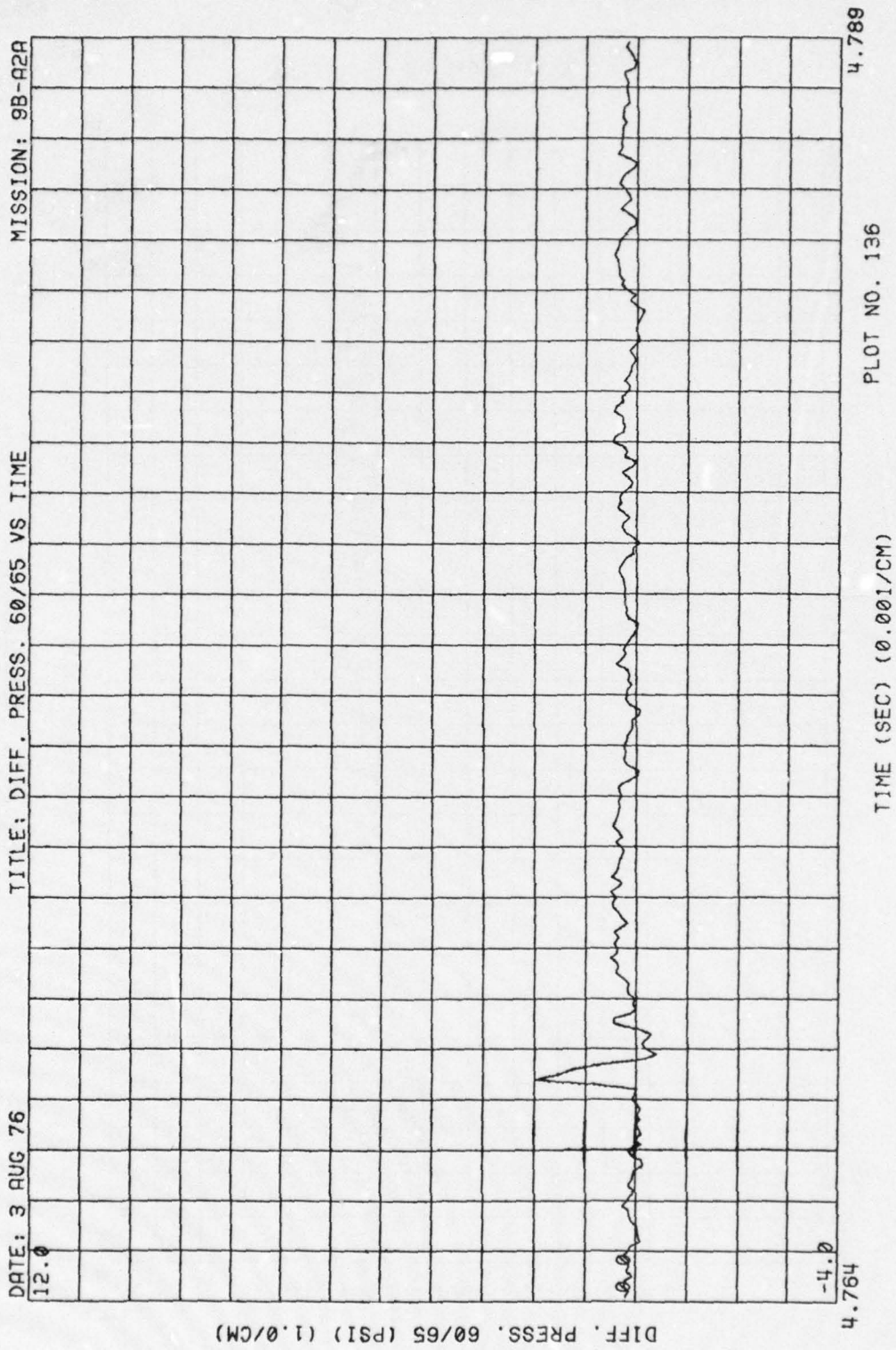


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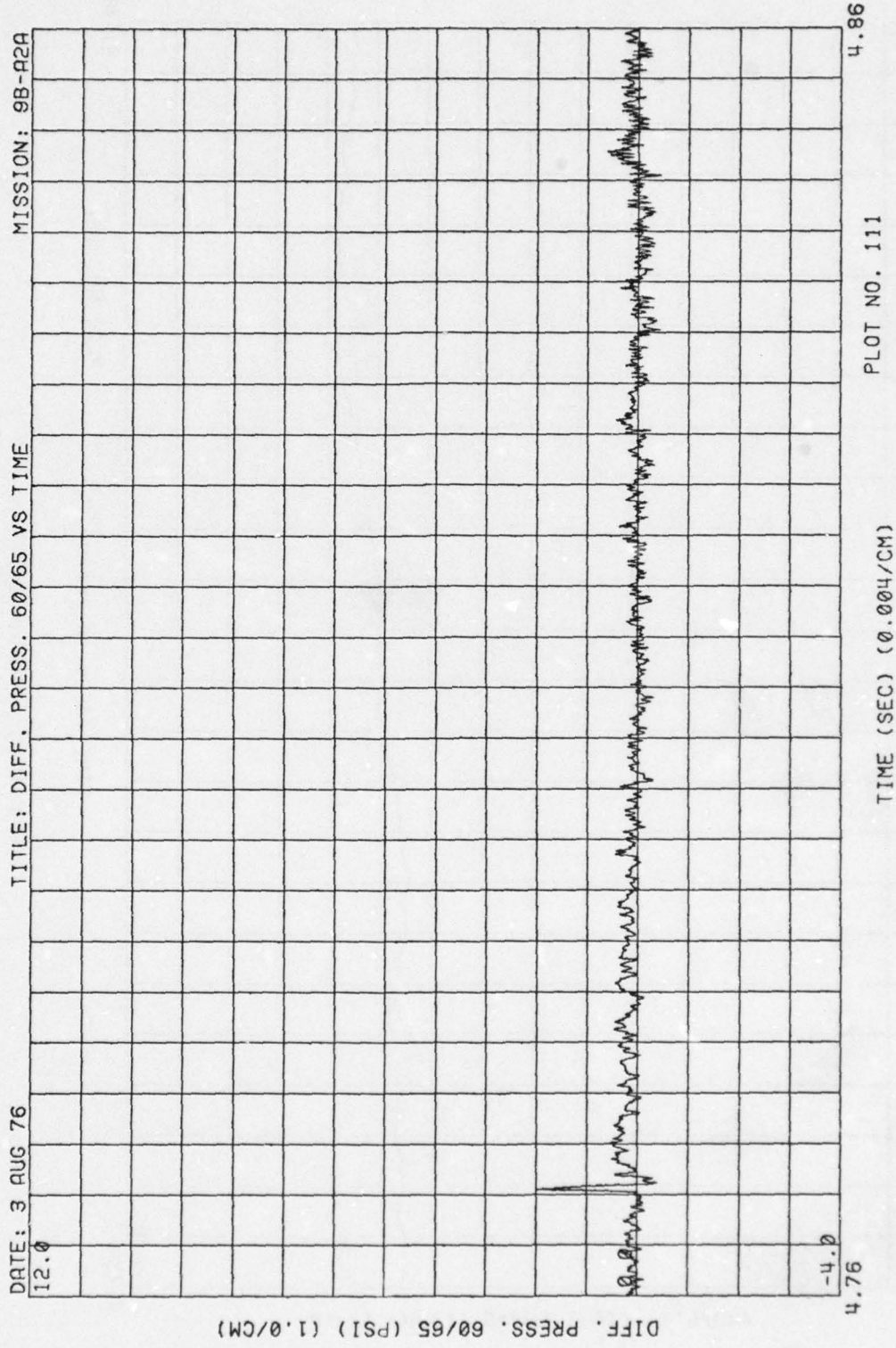


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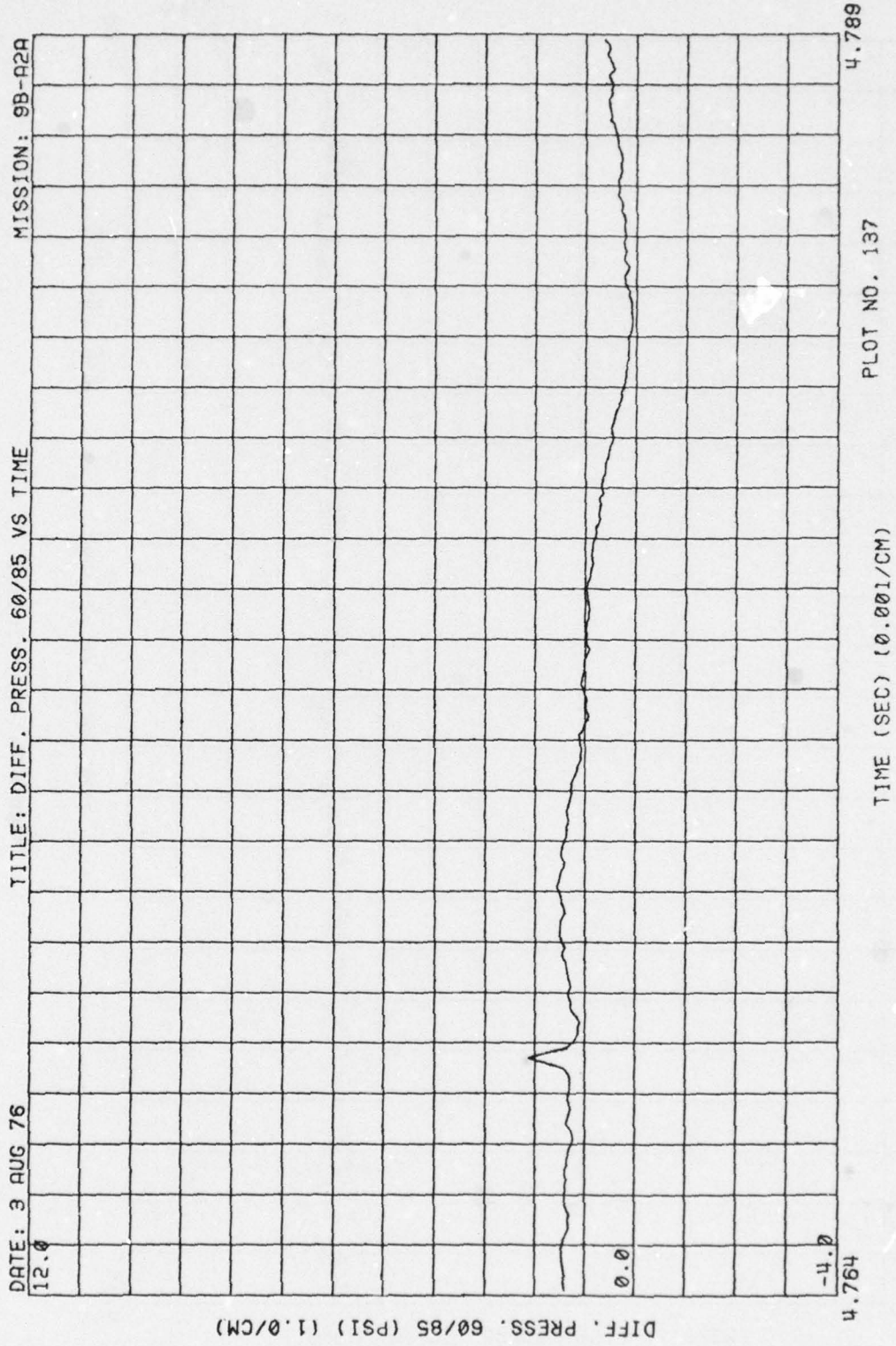


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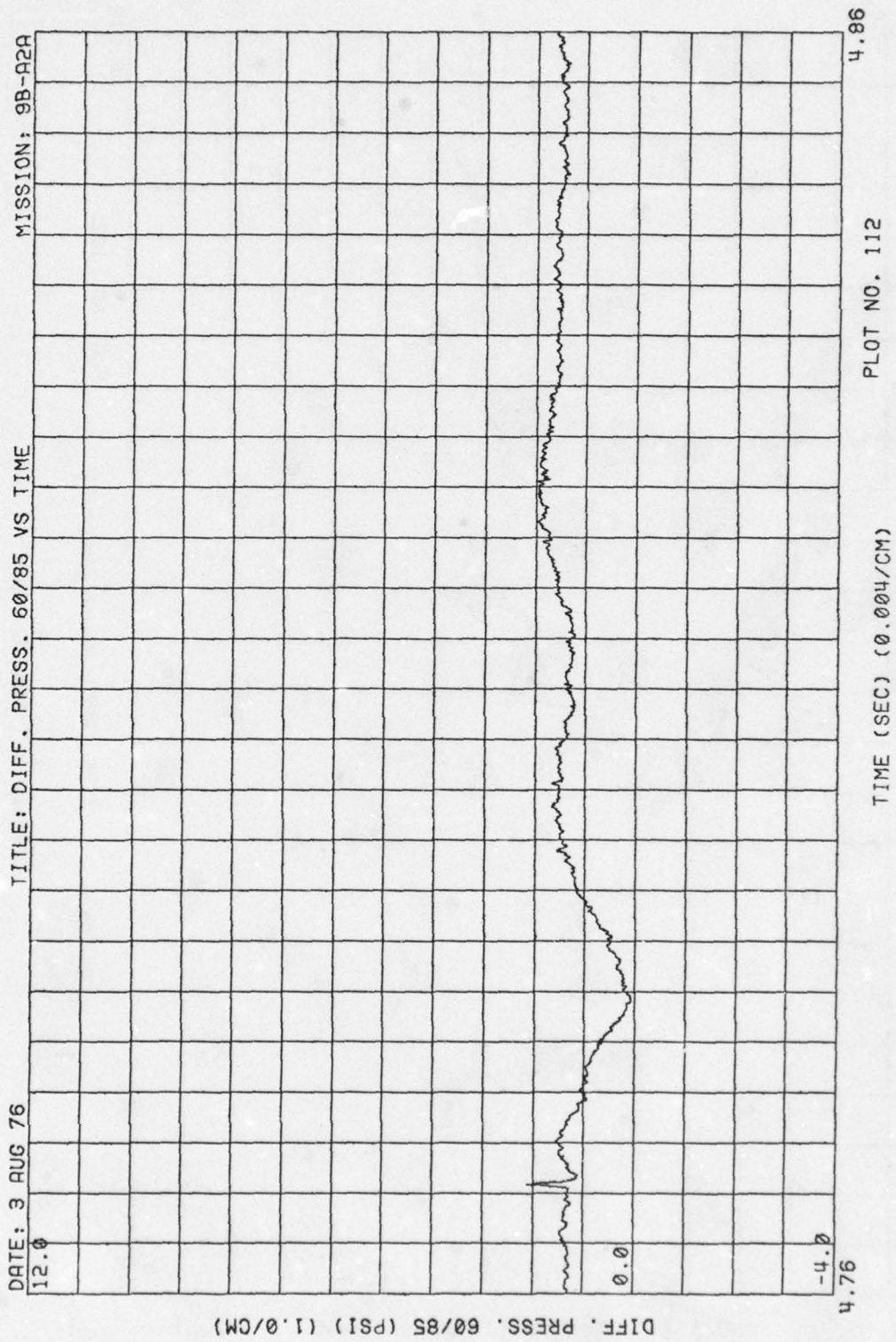


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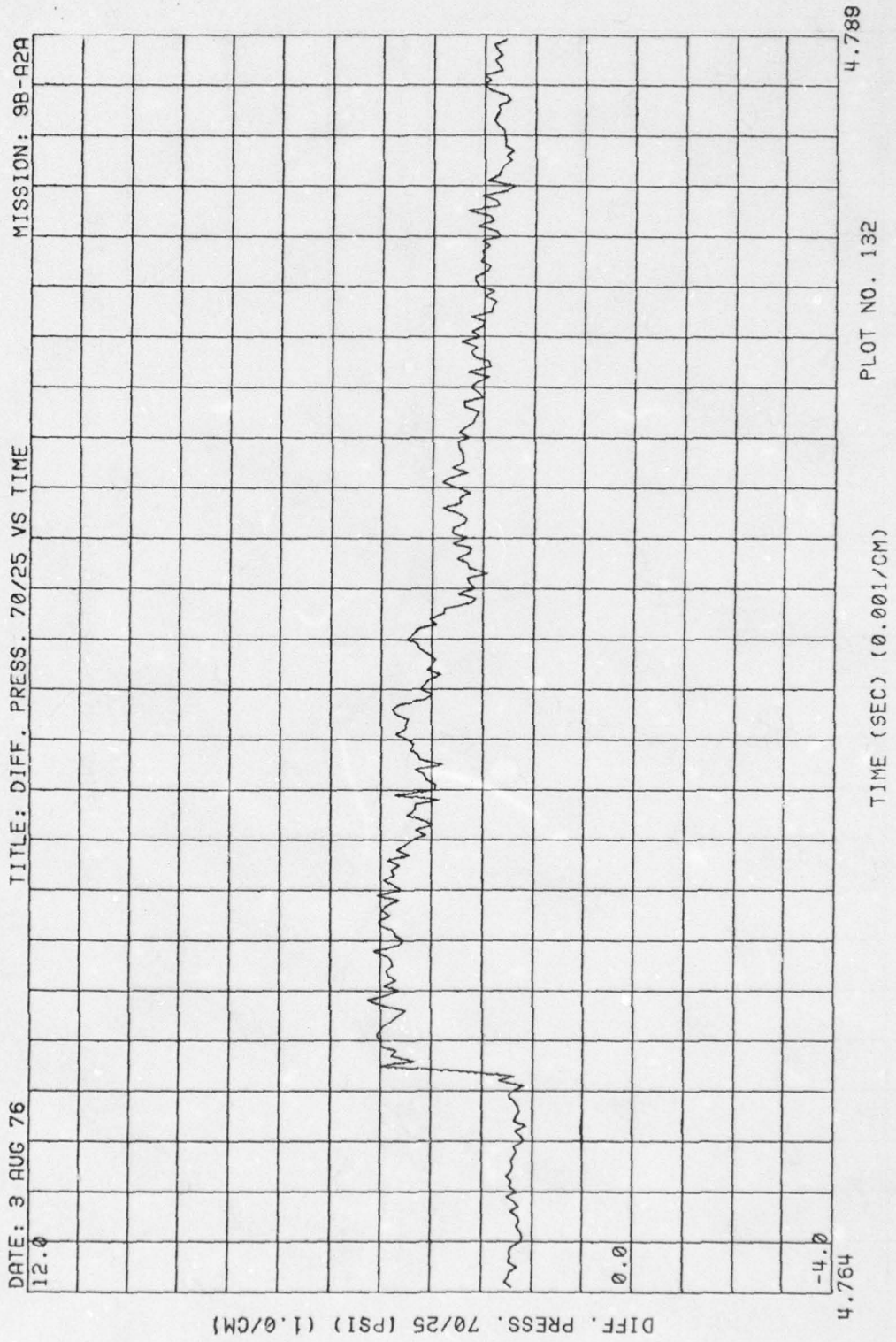


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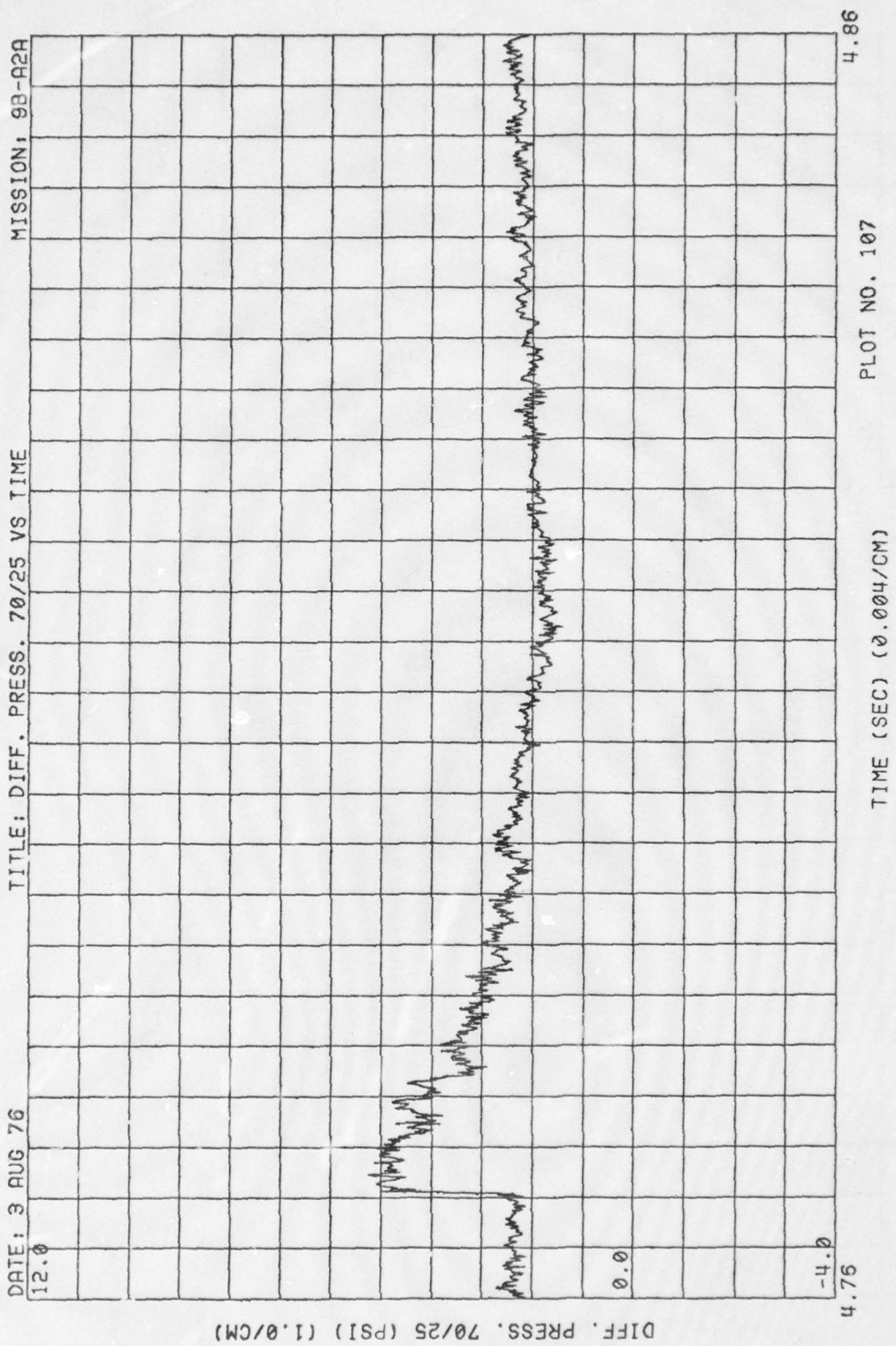


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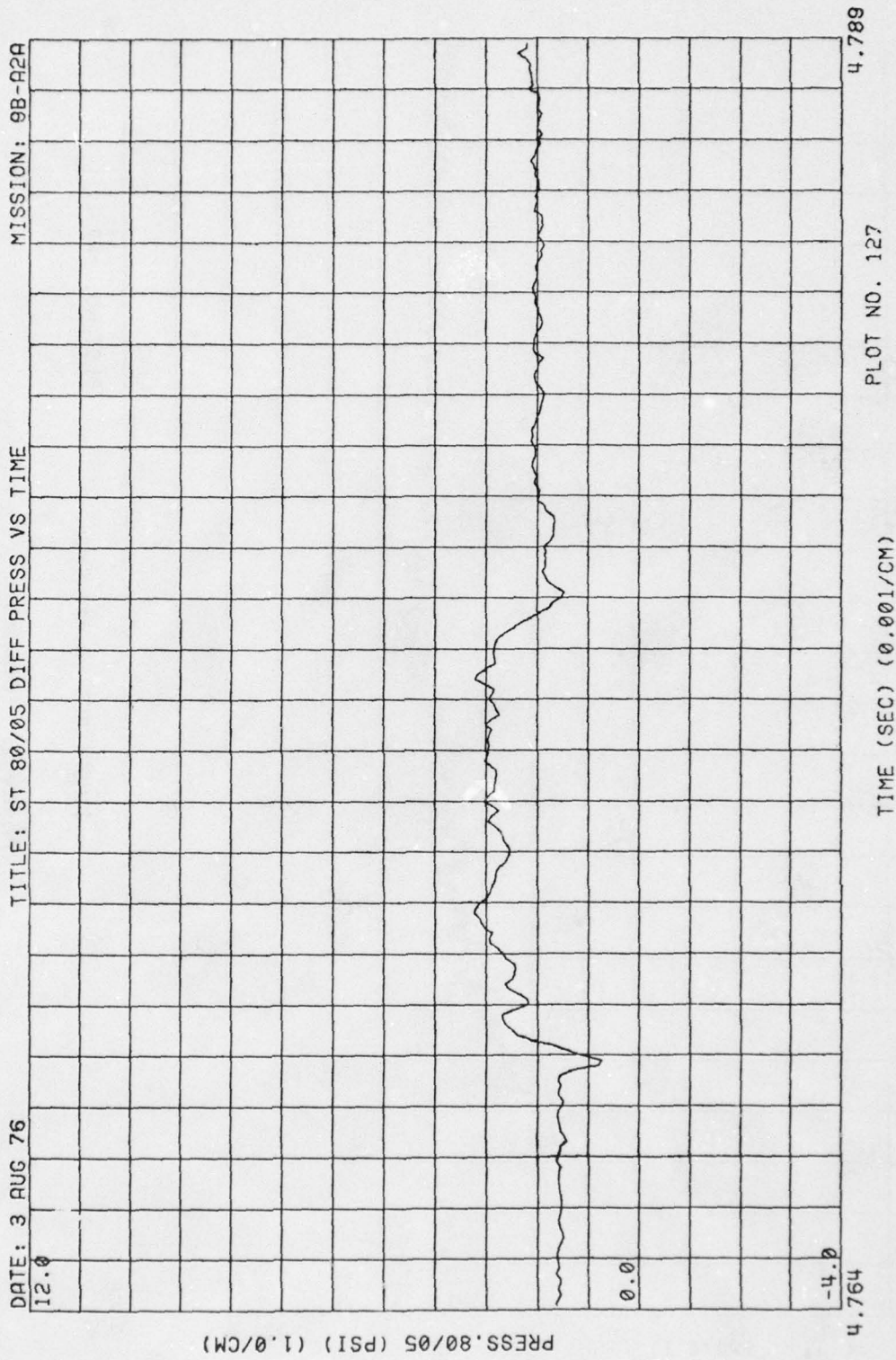


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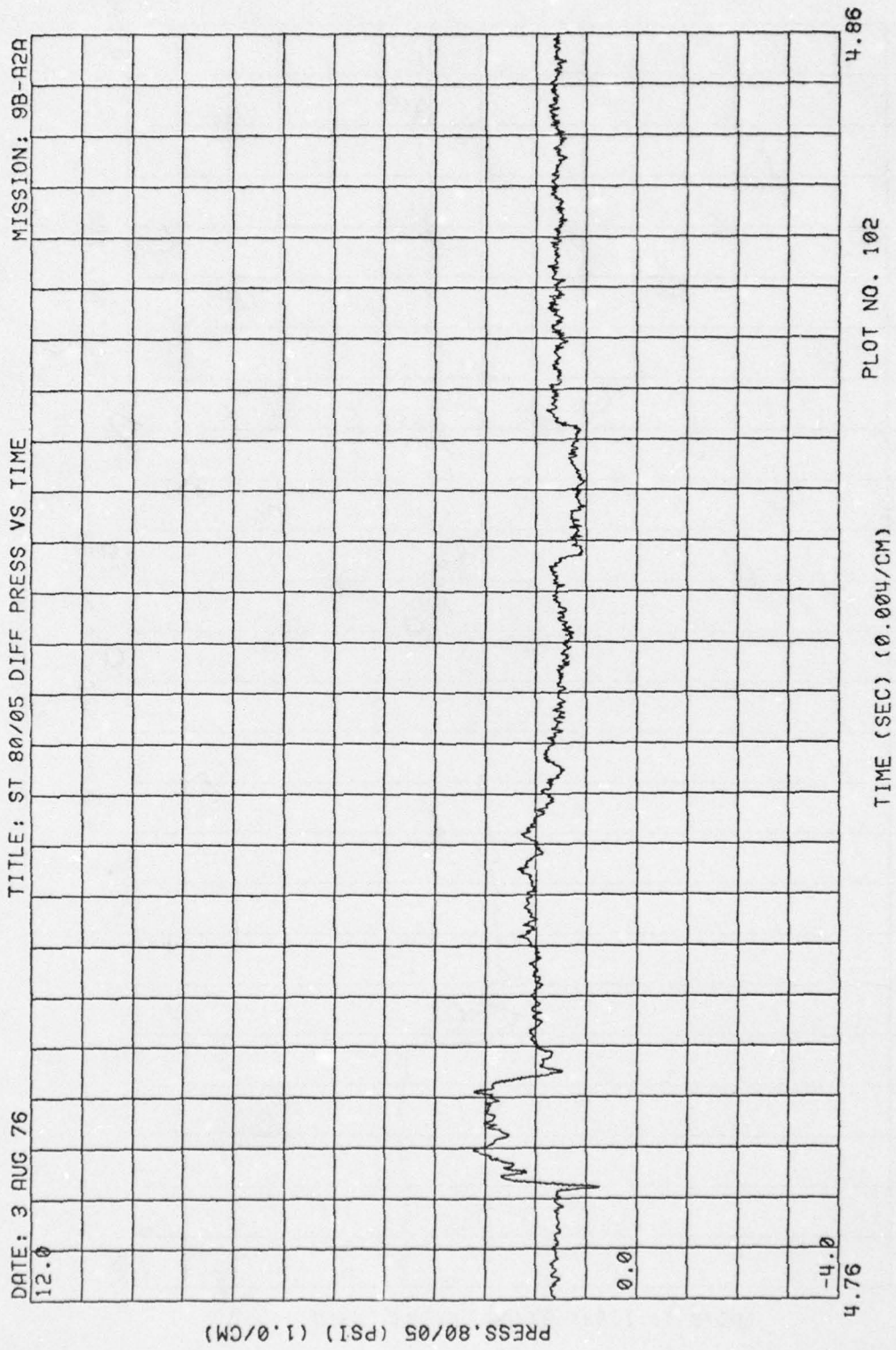


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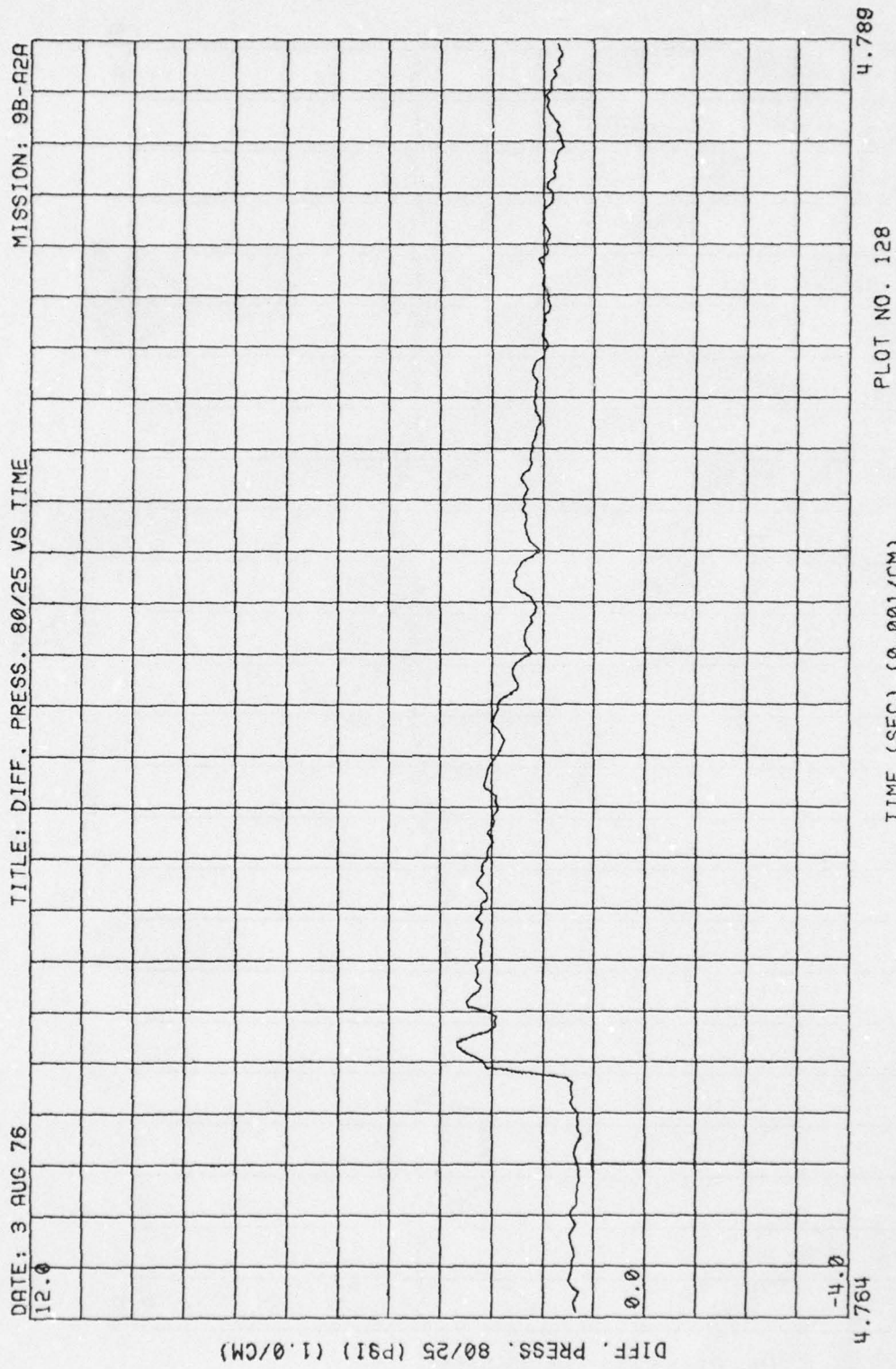


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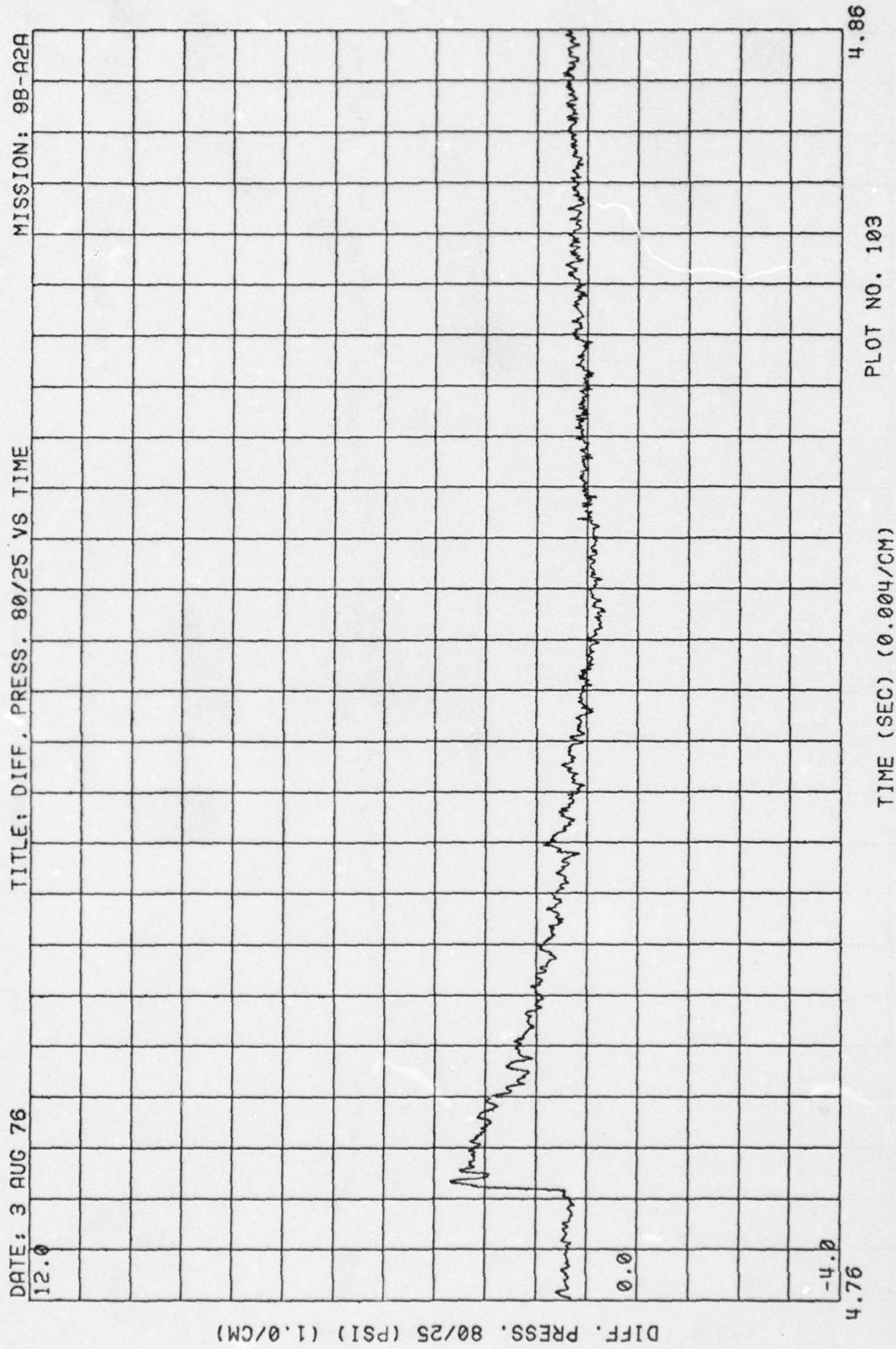


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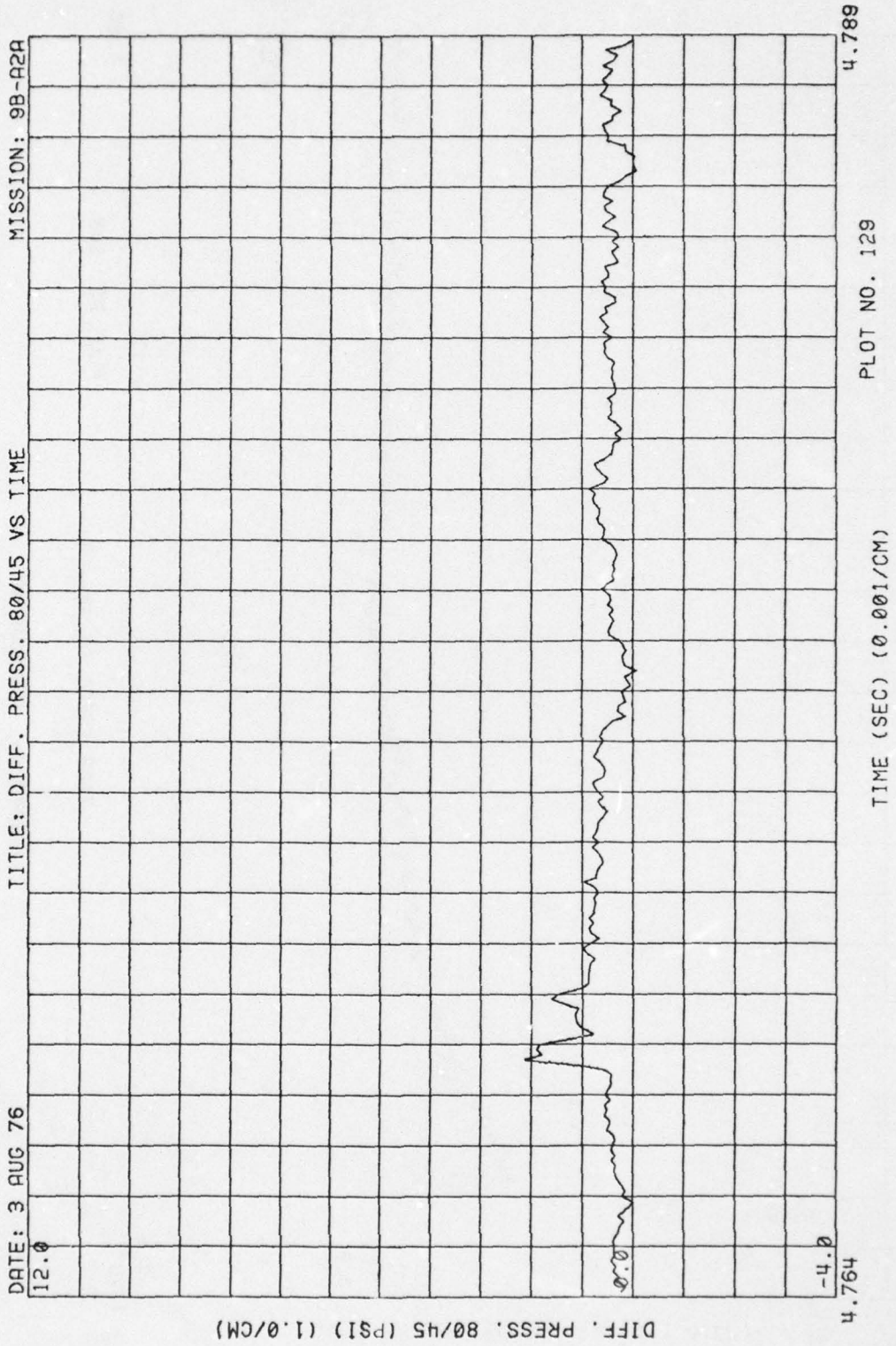


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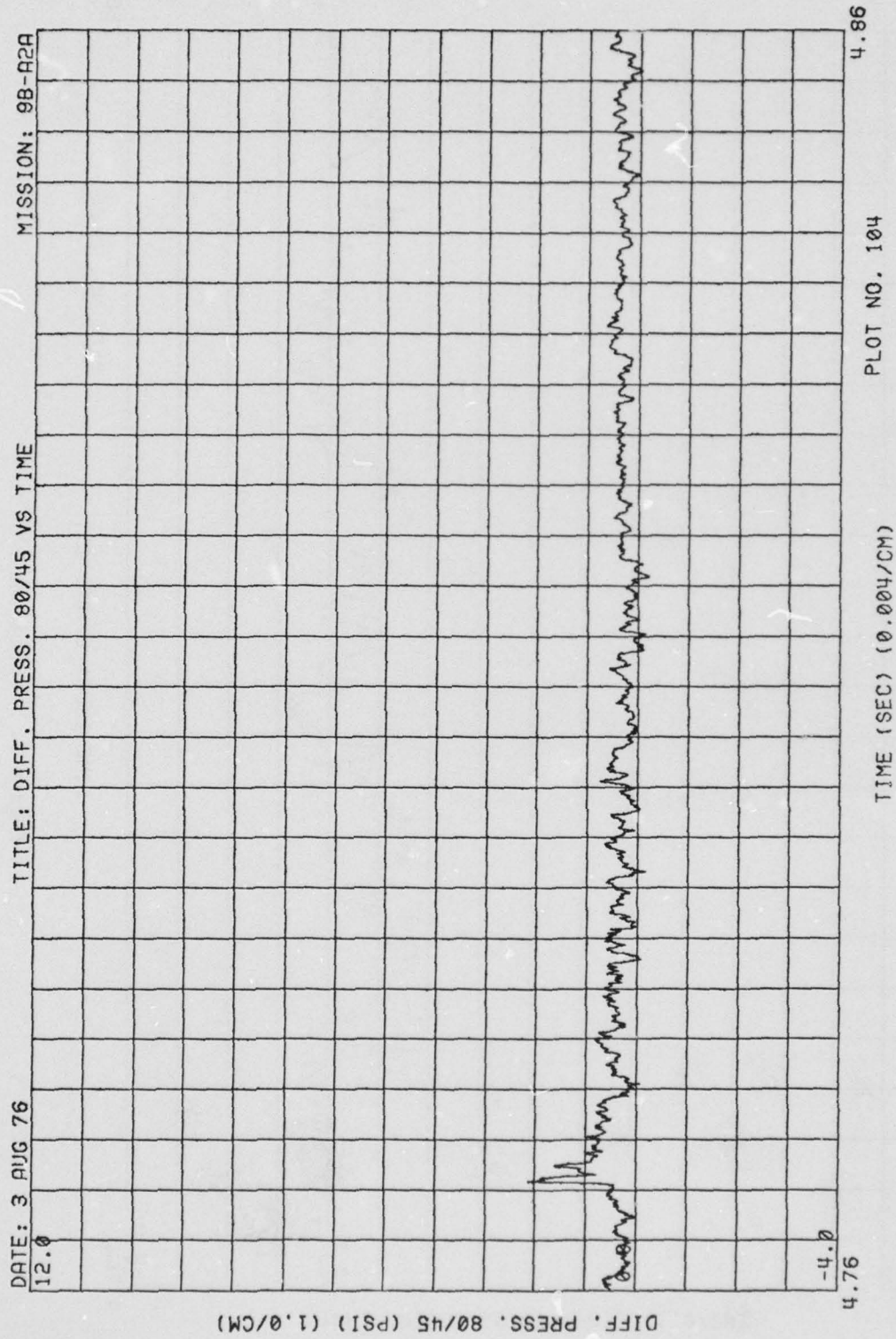


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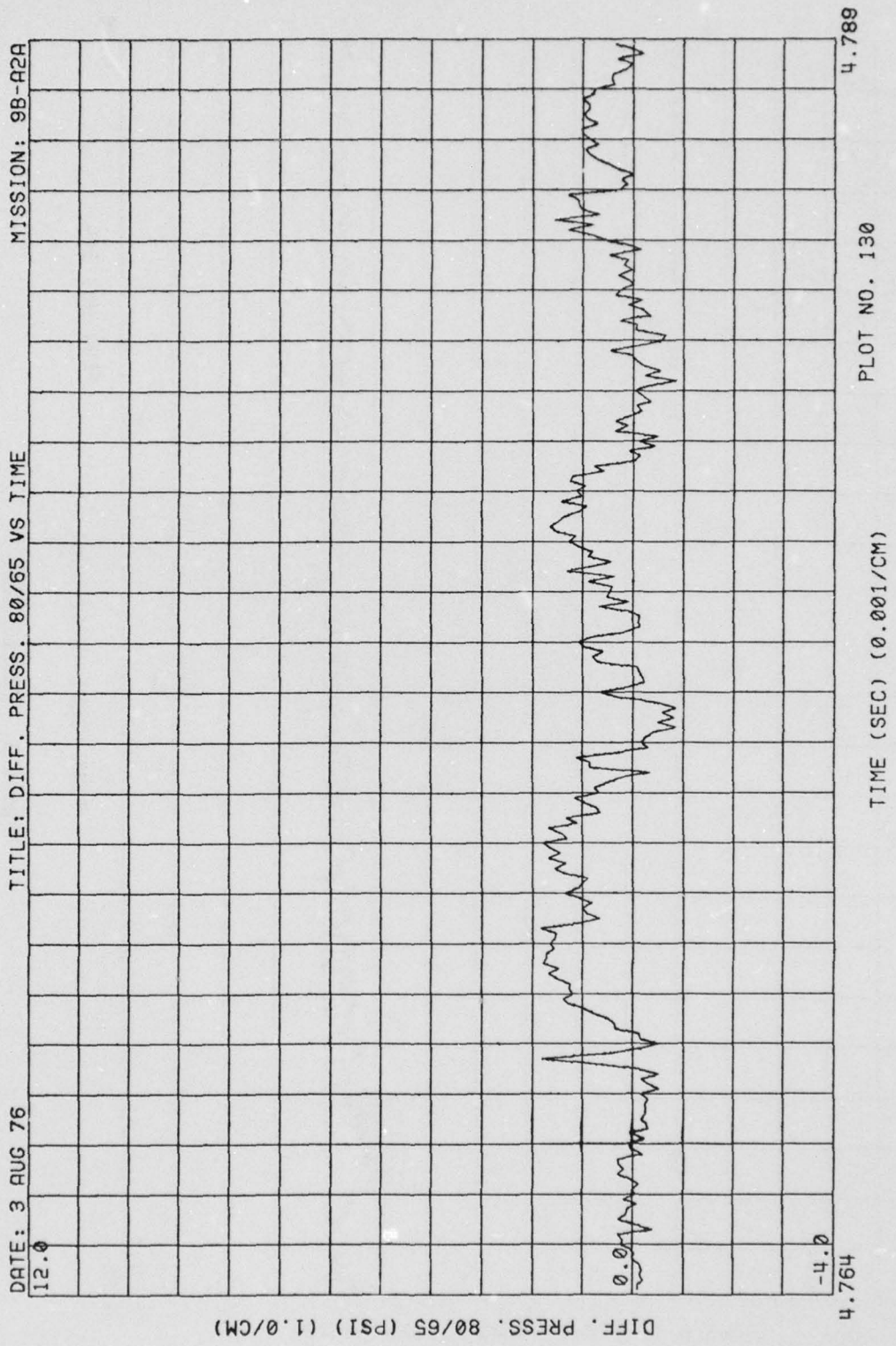


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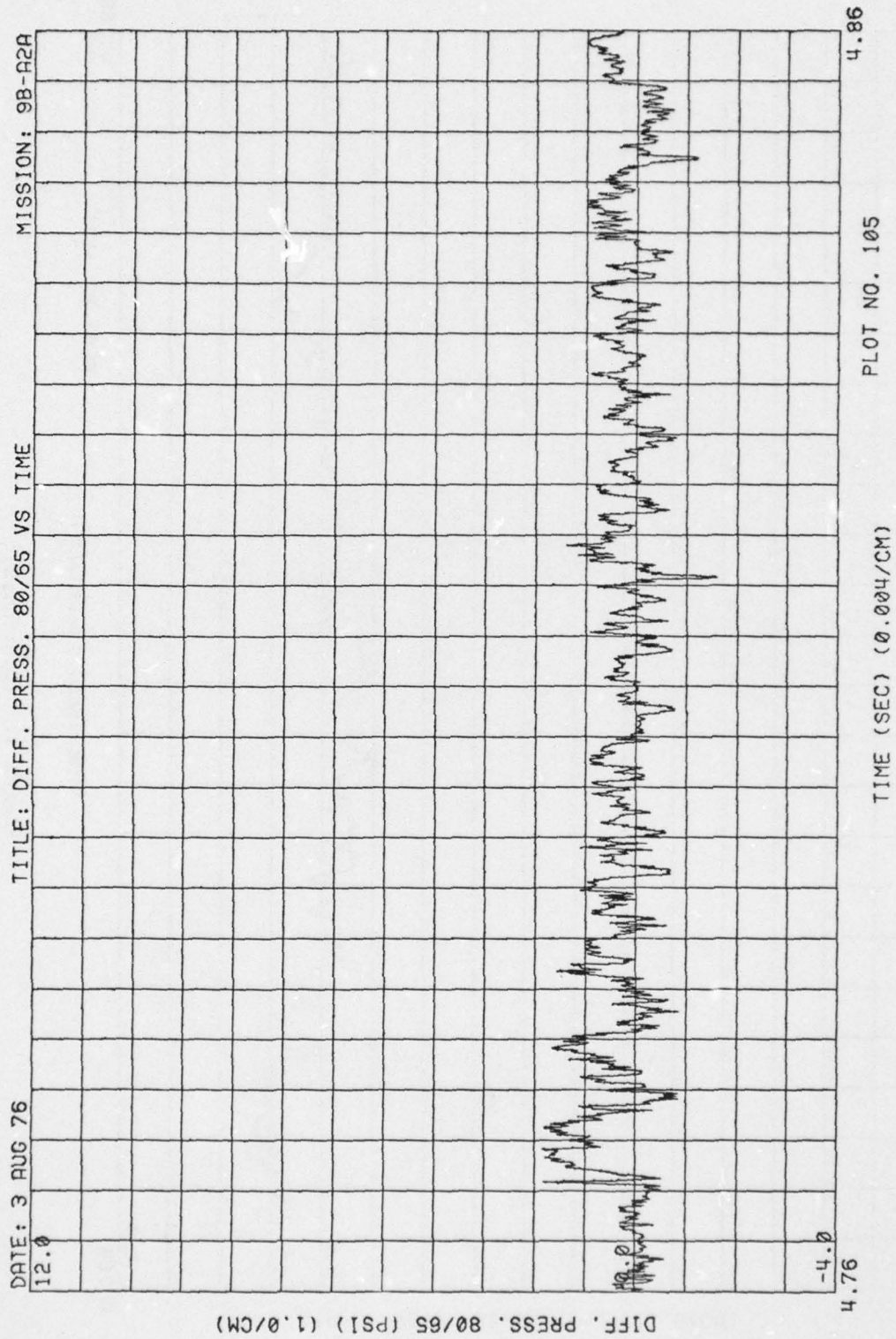


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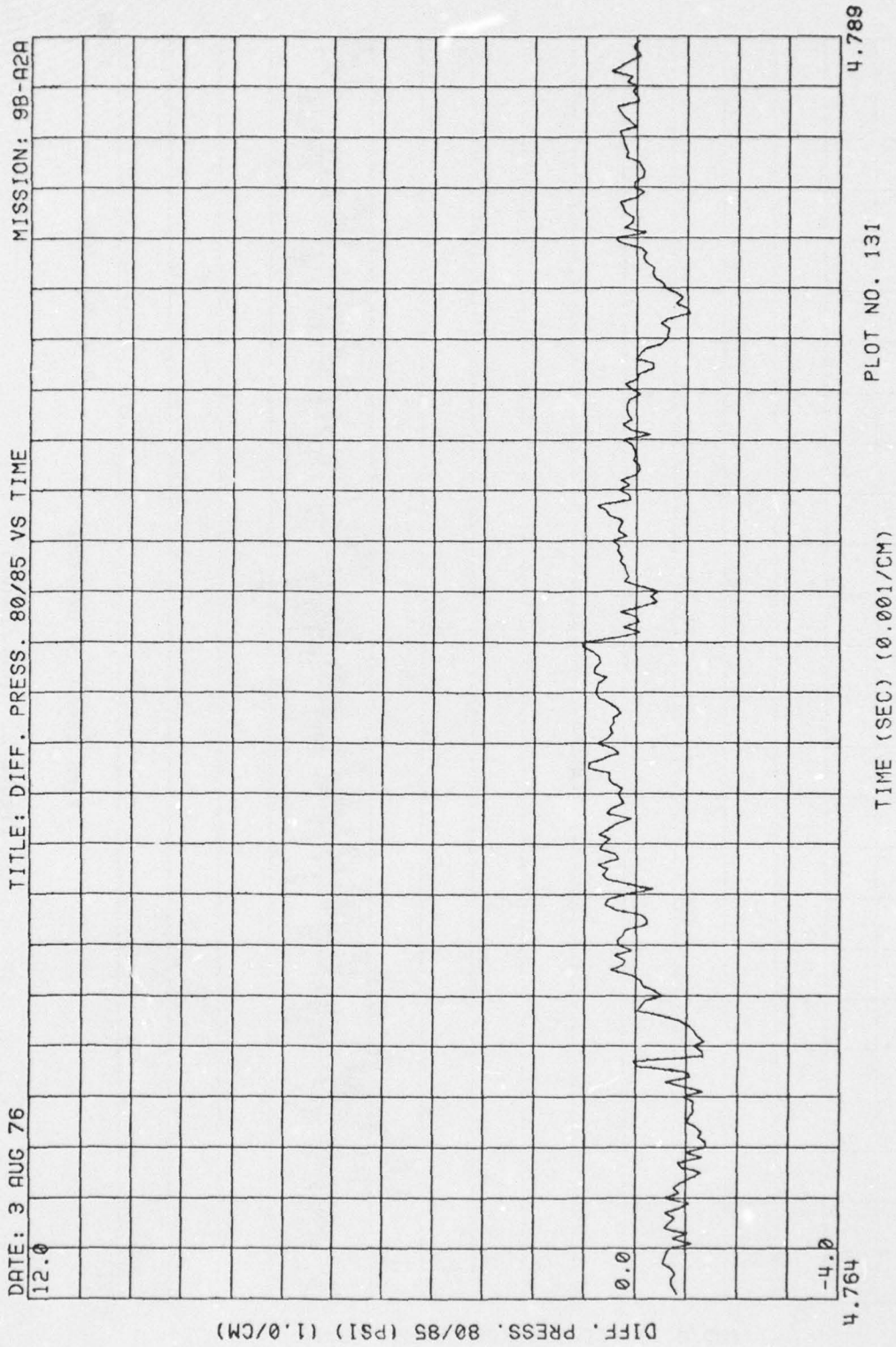


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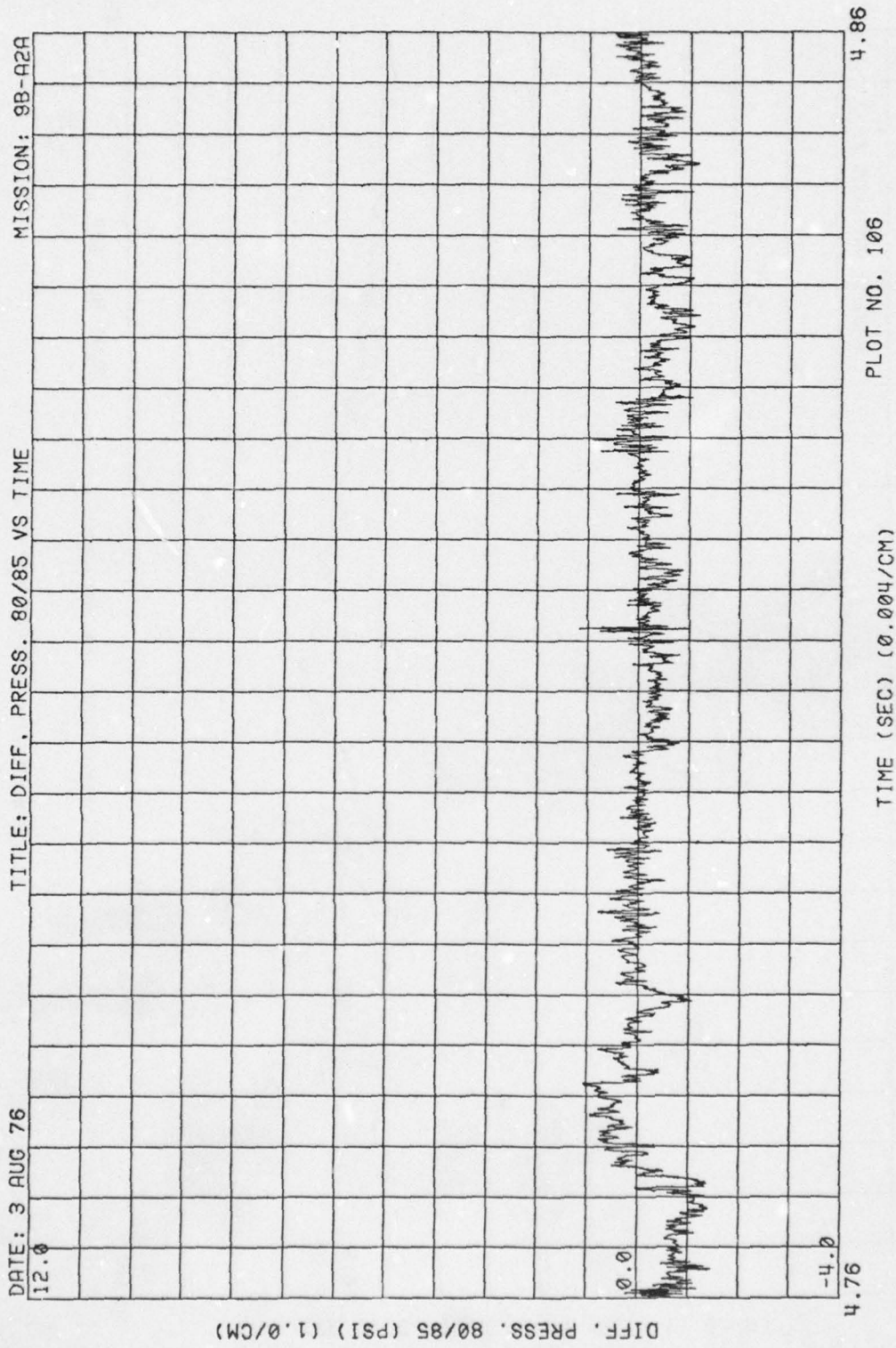


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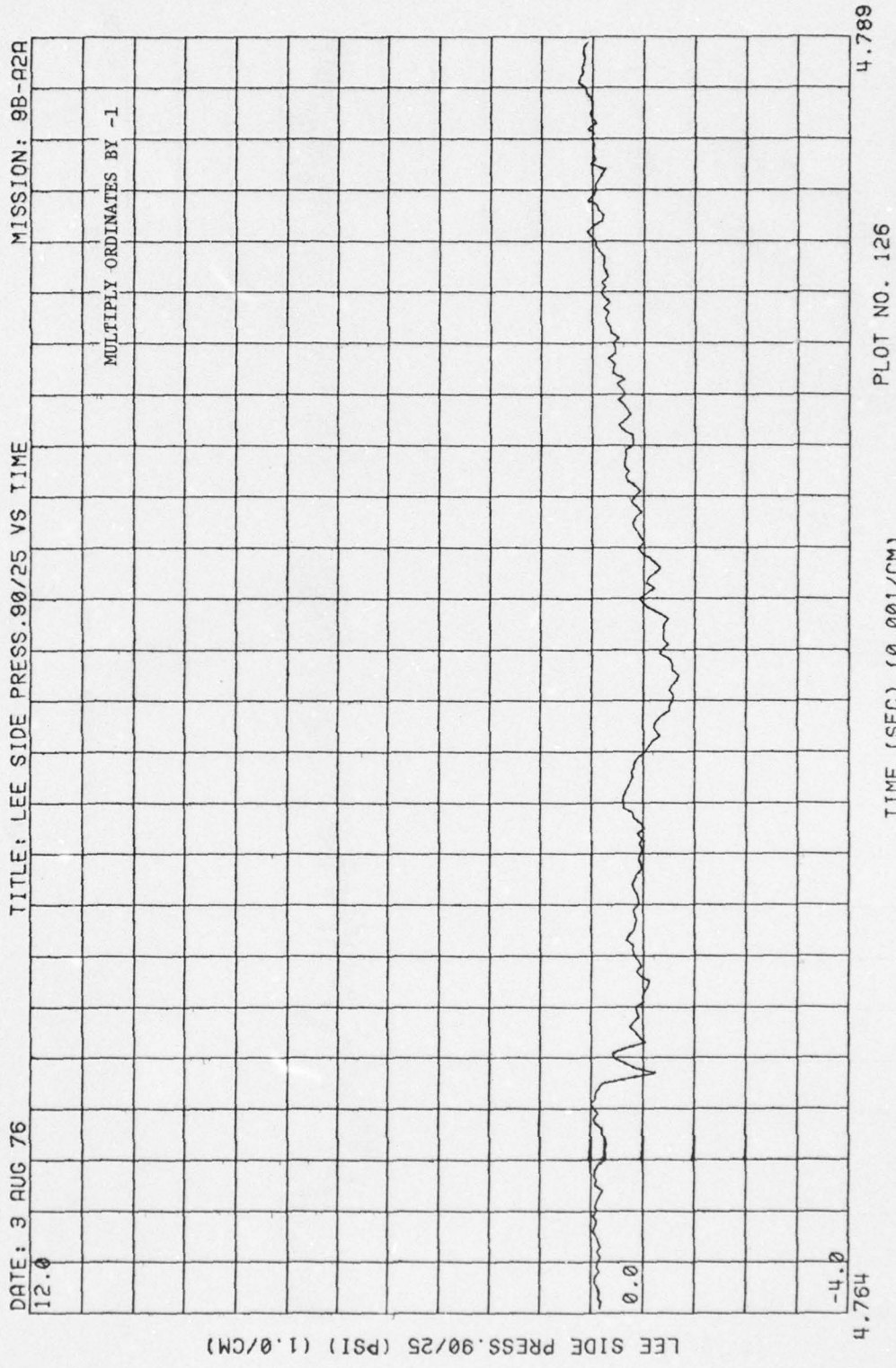


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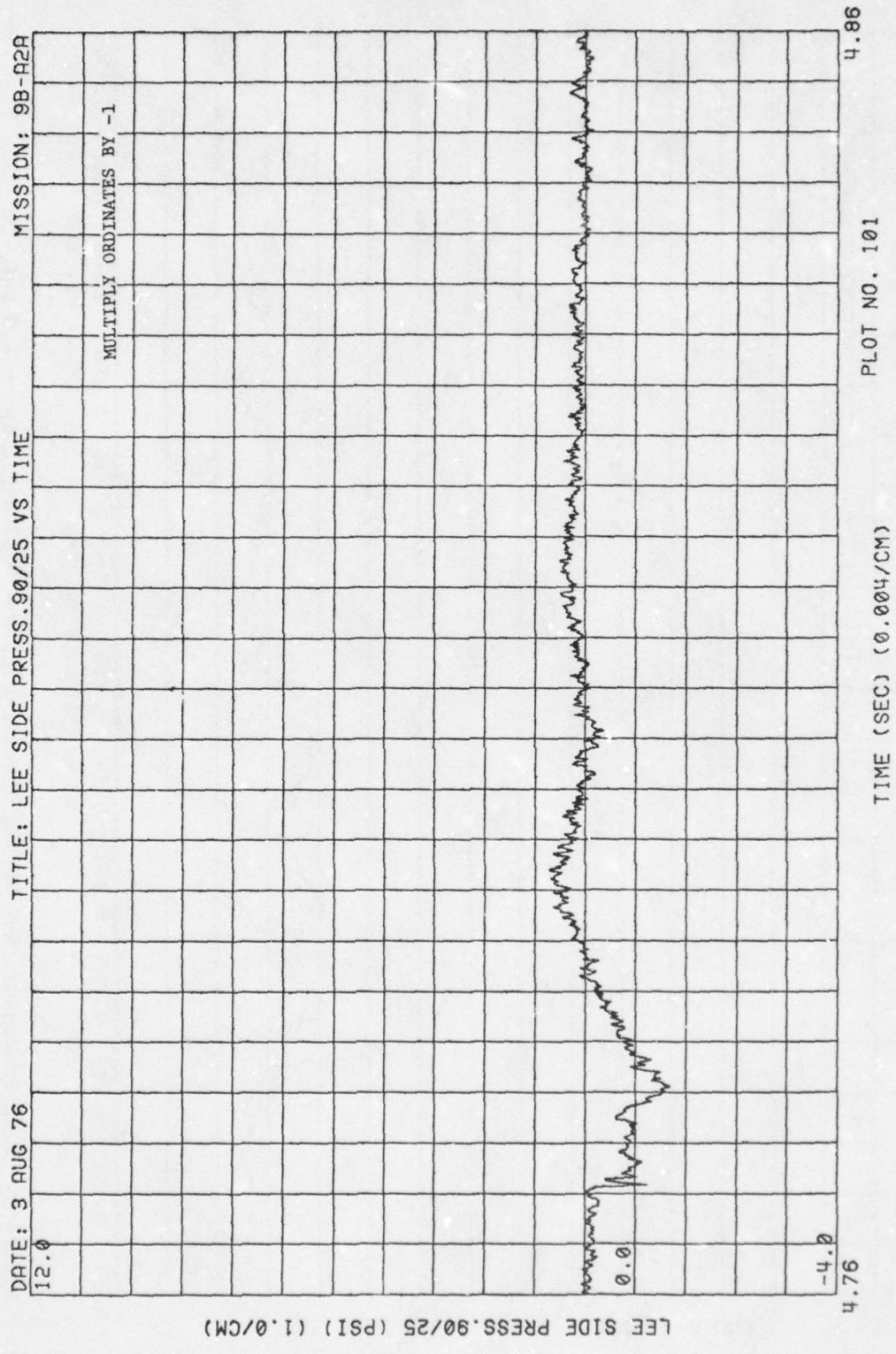


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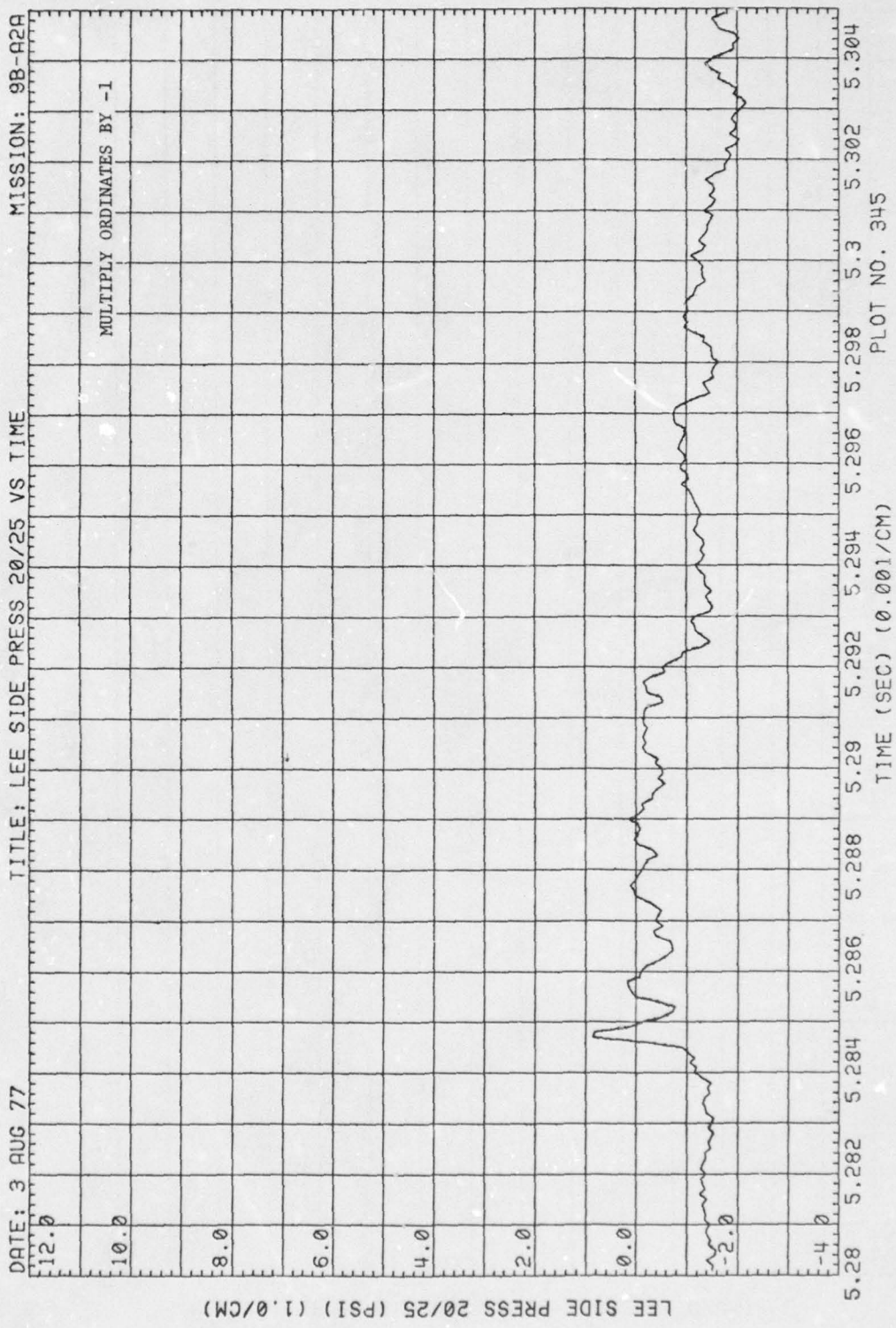


Figure 4. Wing Pressures, Run 9B-A2, Intercept 2, $\phi = 90.3$ deg., $\Delta p_s = 4.0$ psi.

AD-A062 365

KAMAN AVIDYNE BURLINGTON MASS

F/G 19/4

MEASUREMENTS OF BLAST PRESSURES ON A RIGID 65 DEGREE SWEPTBACK --ETC(U)

JUN 77 J R RUETENIK, R F SMILEY

DNA001-76-C-0106

KA-TR-137-VOL-2

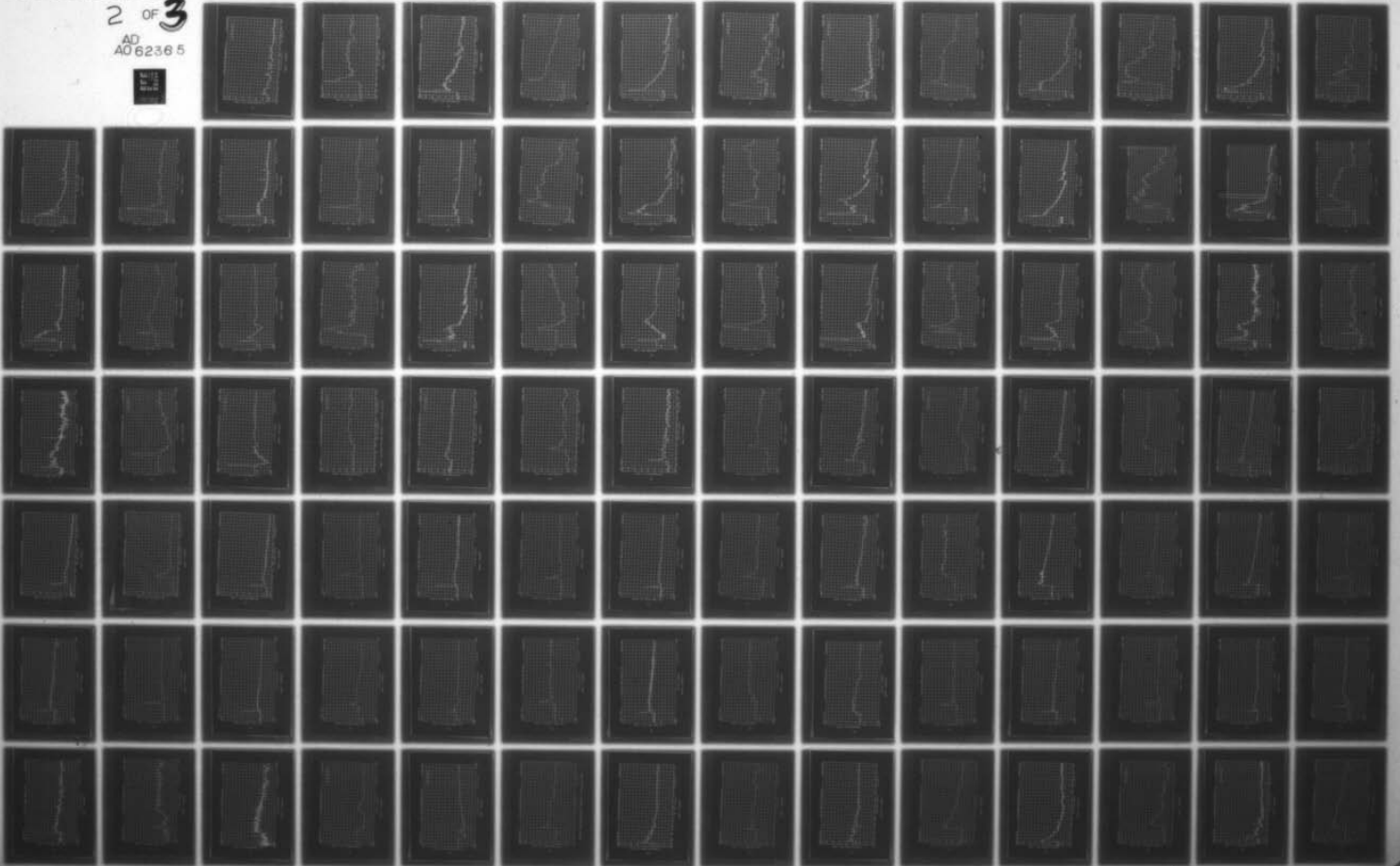
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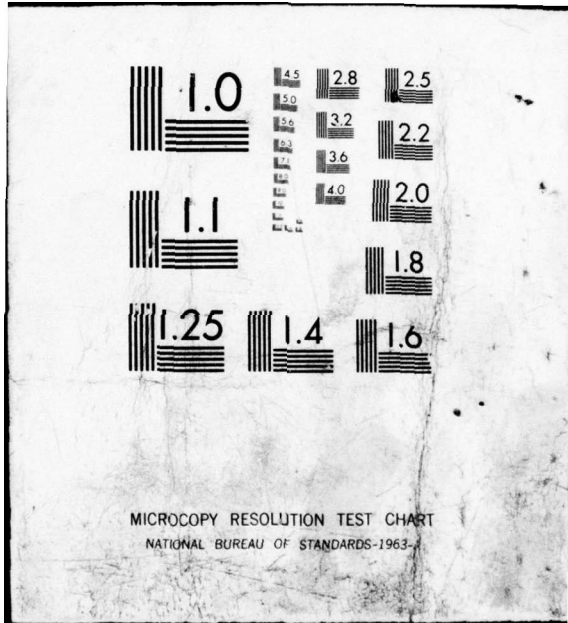
NL

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2 OF 3

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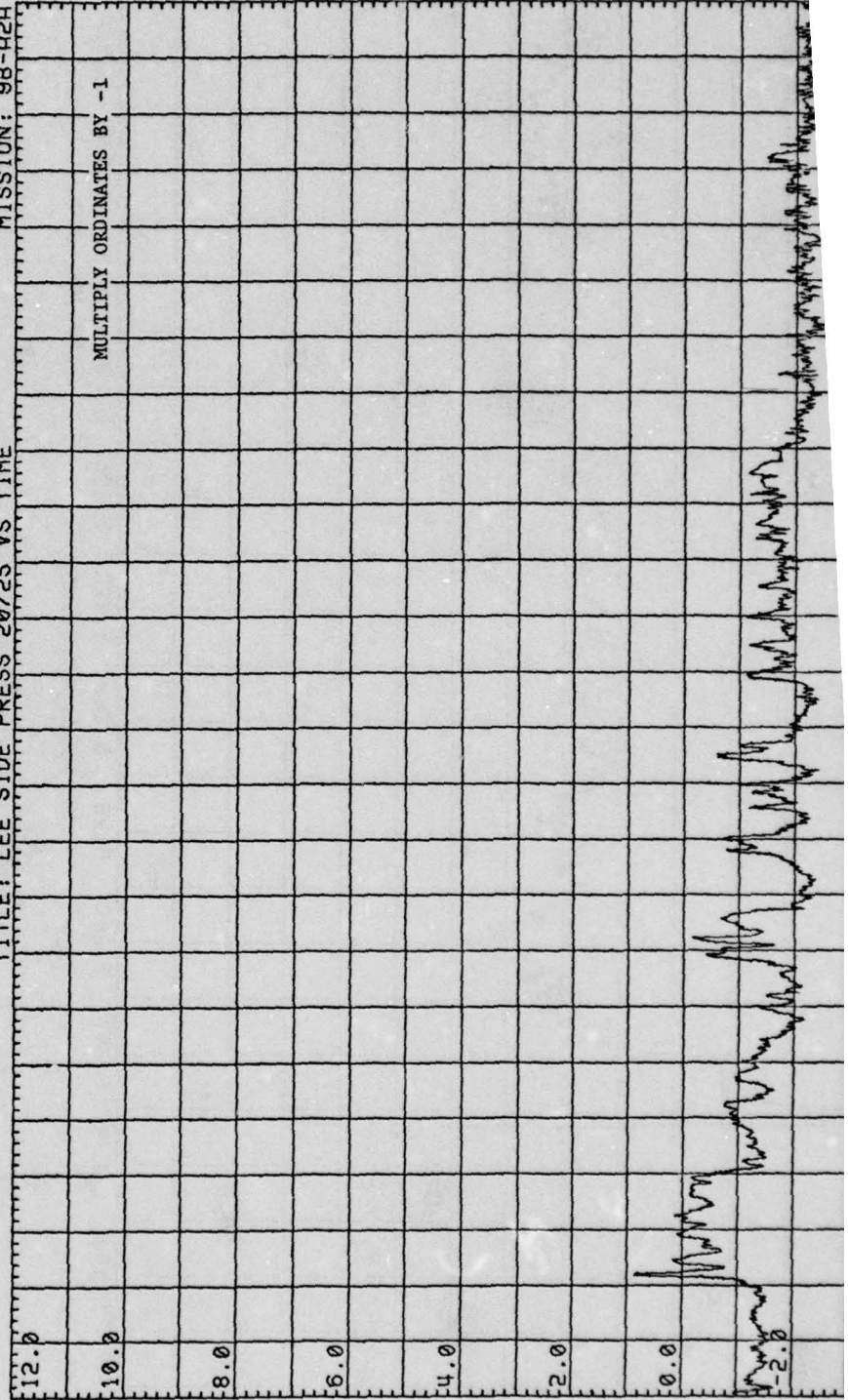




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

MISSION: 9B-R2A

TITLE: LEE SIDE PRESS 20/25 VS TIME



LEE SIDE PRESS 20/25 (PSI) (1.0/CM)

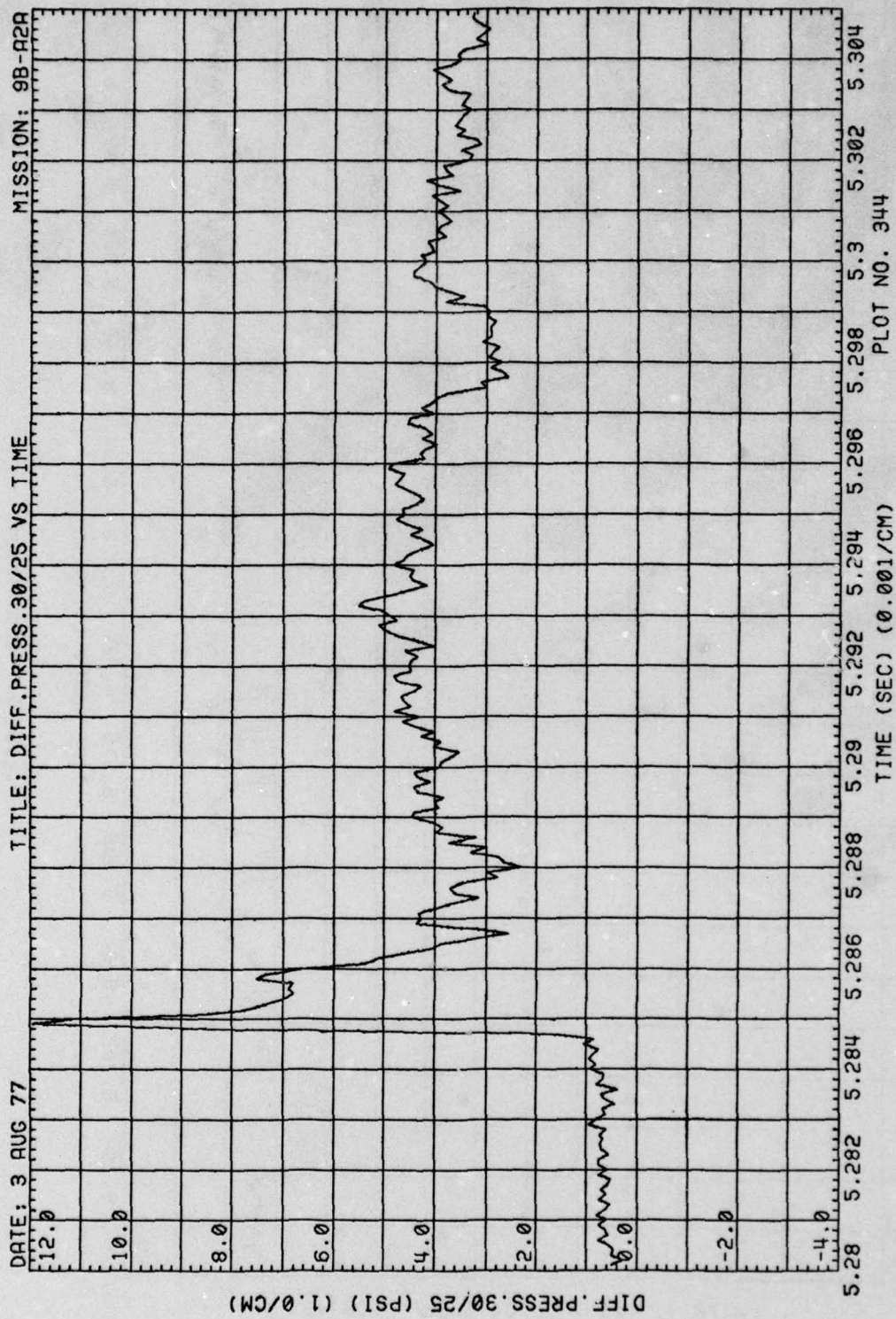


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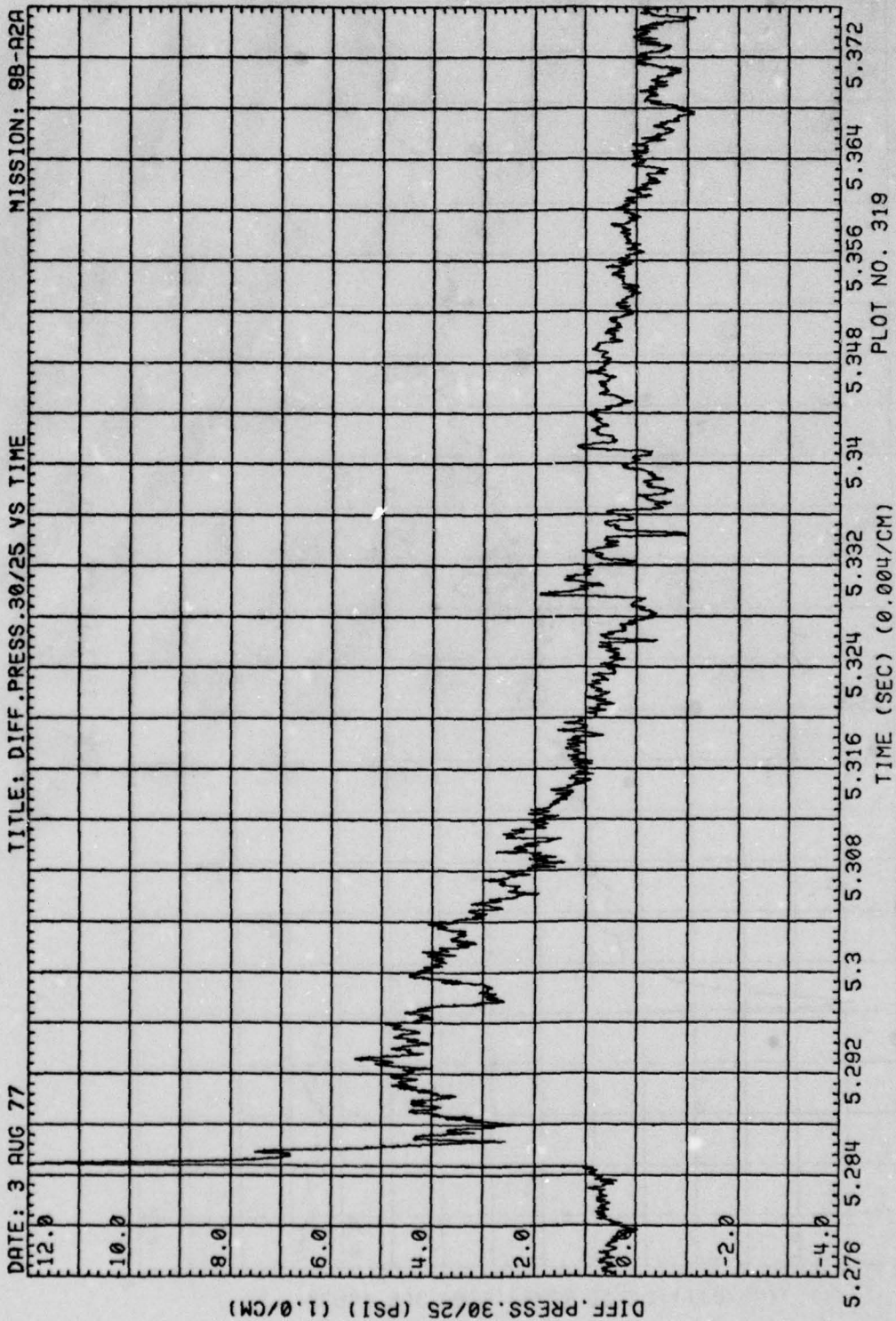


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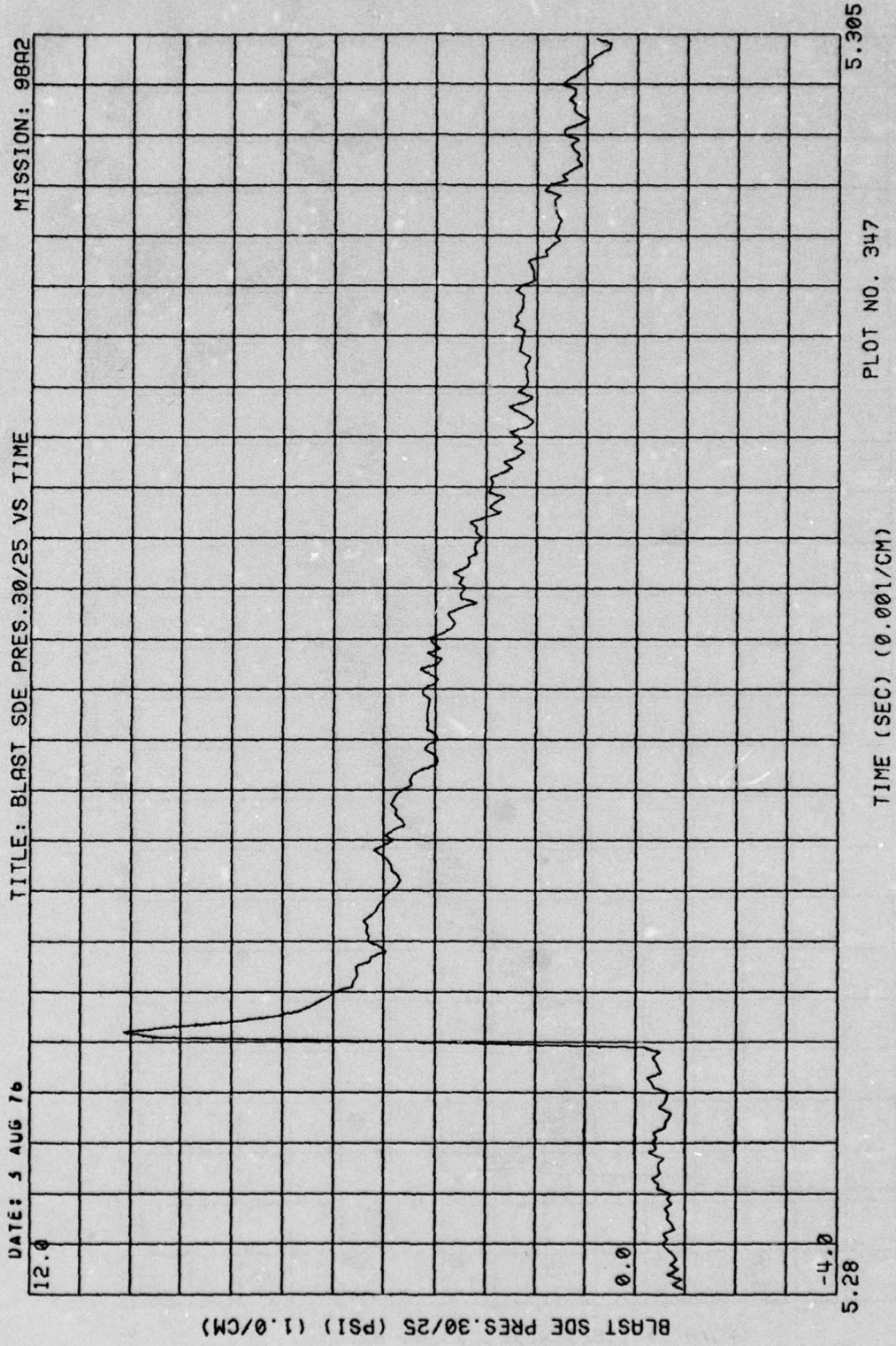


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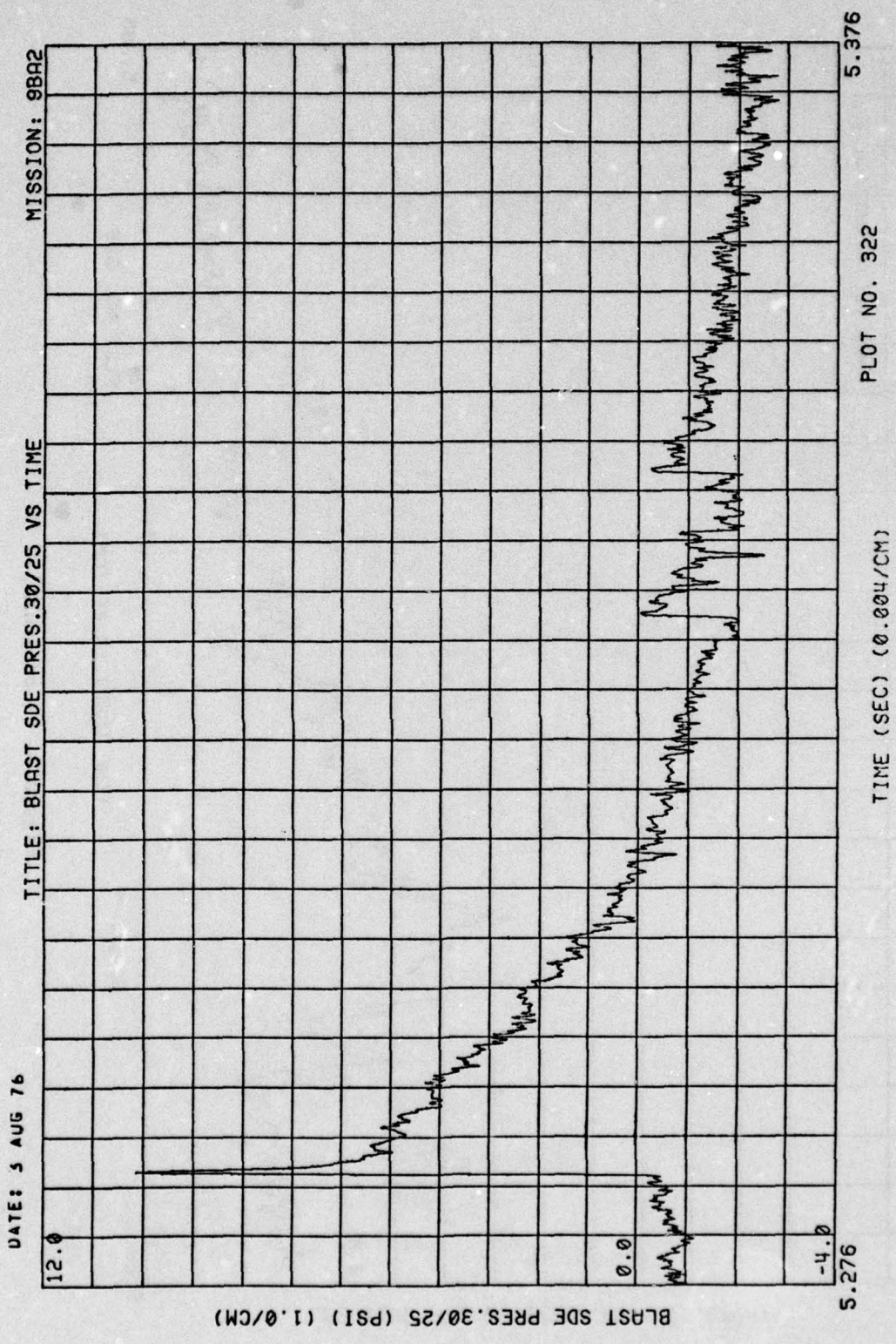


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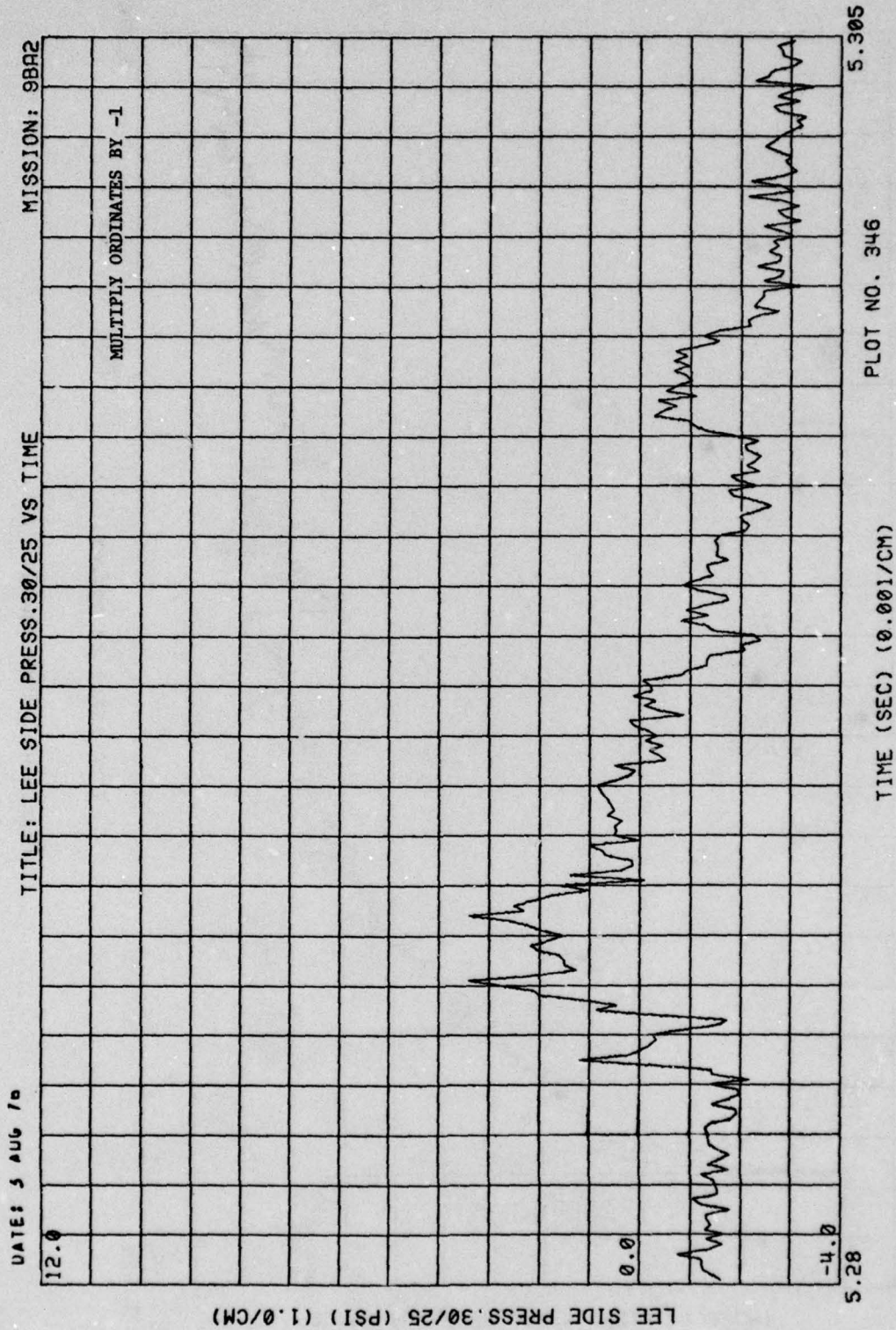


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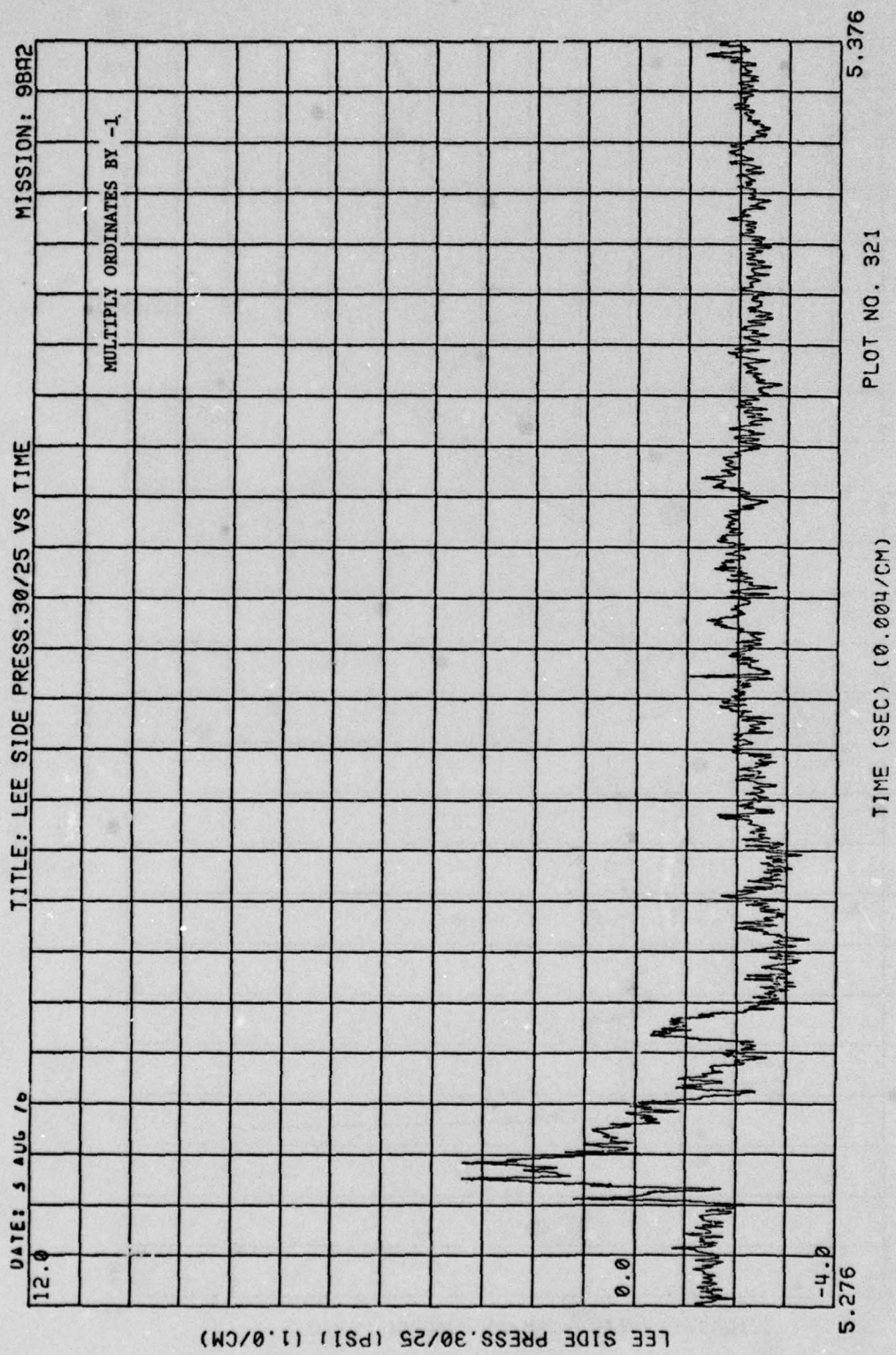


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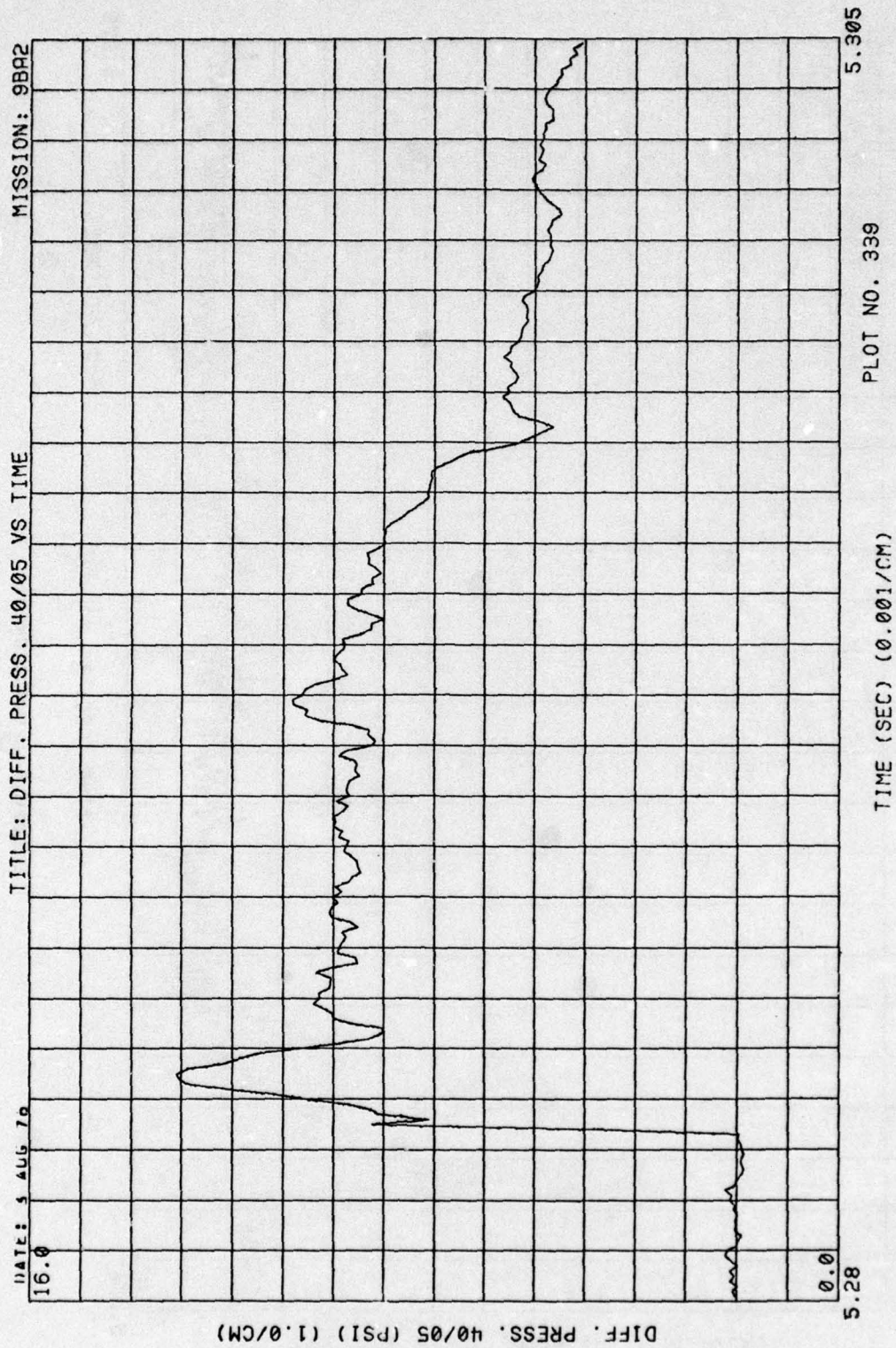


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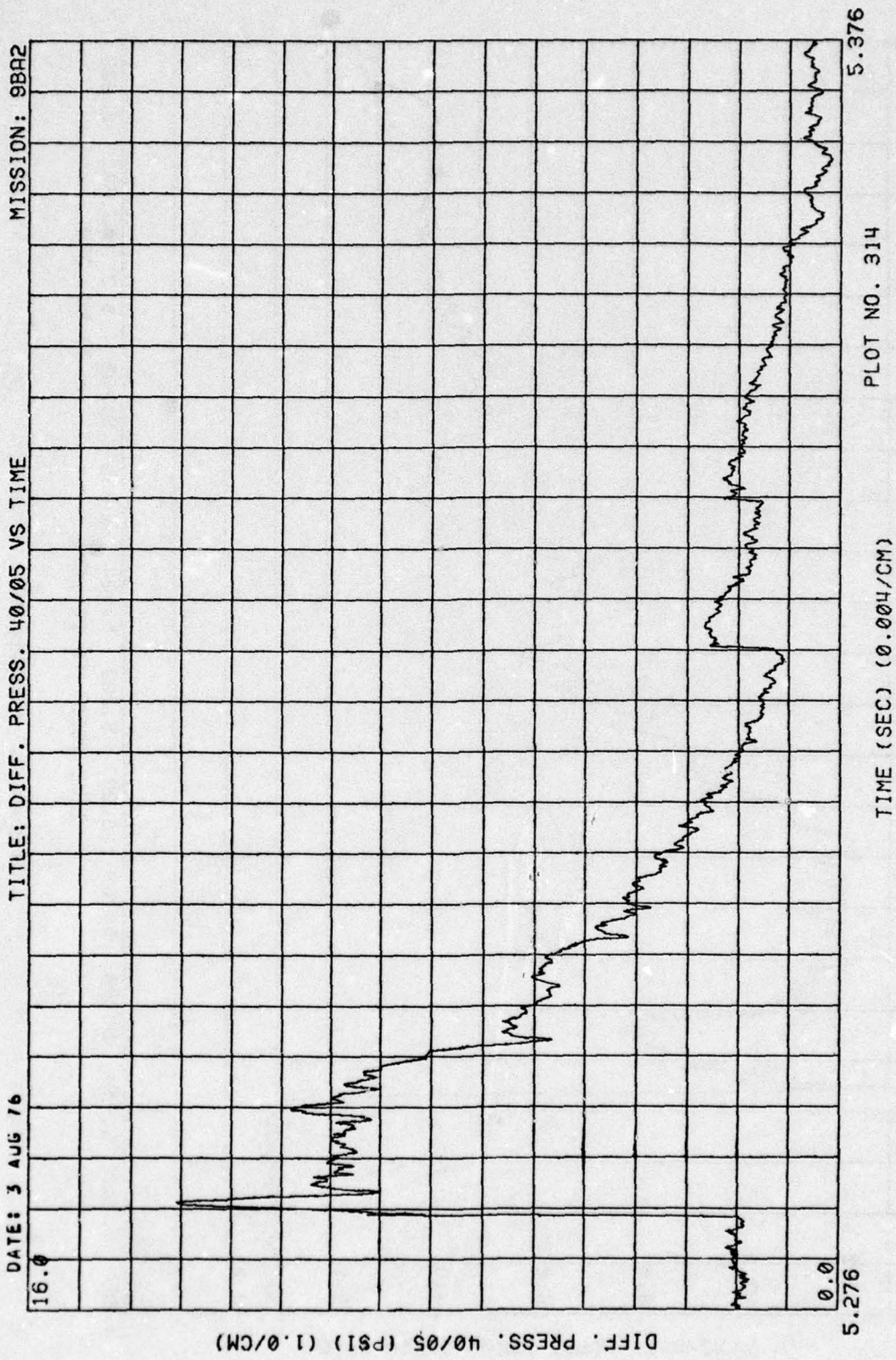


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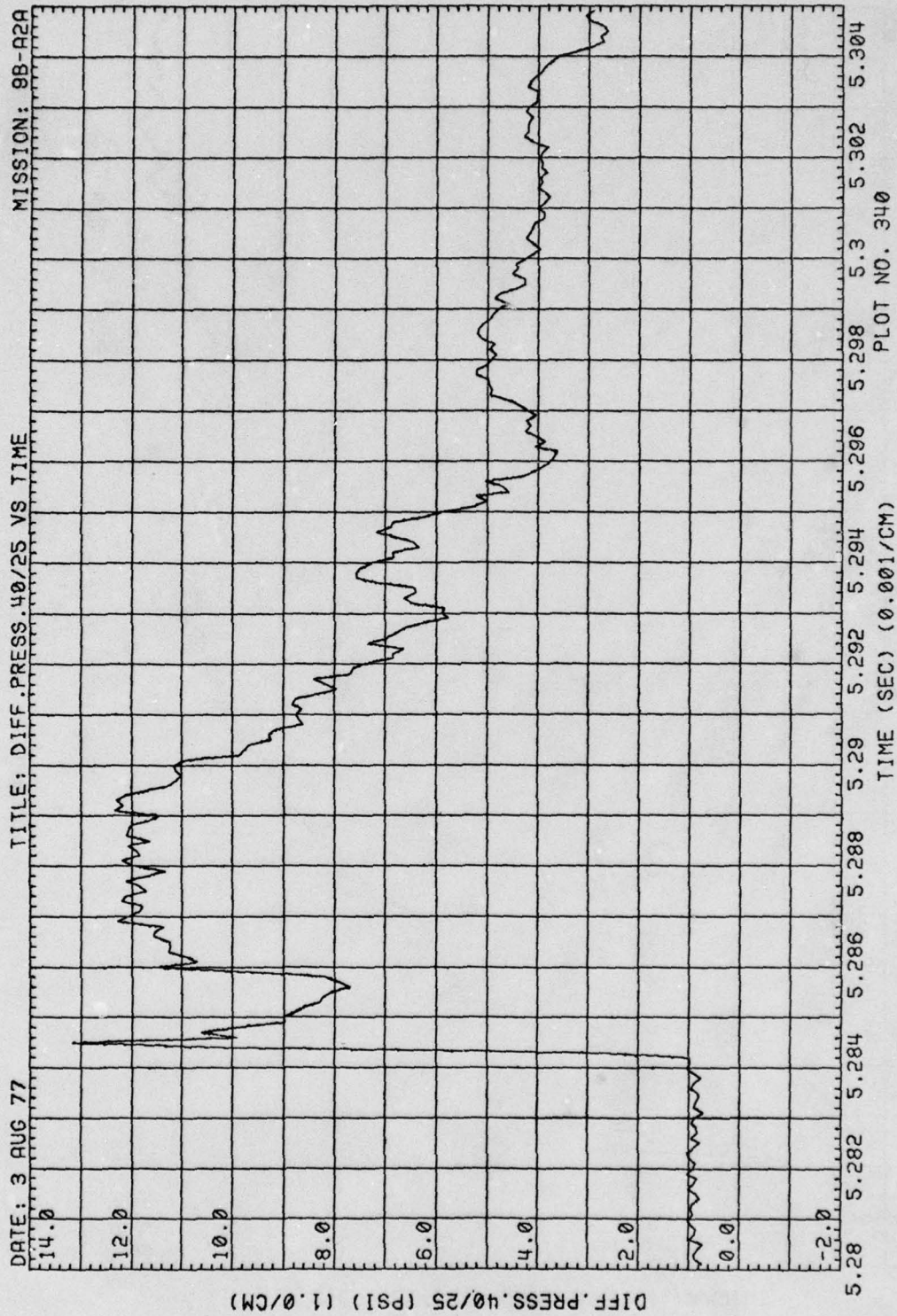


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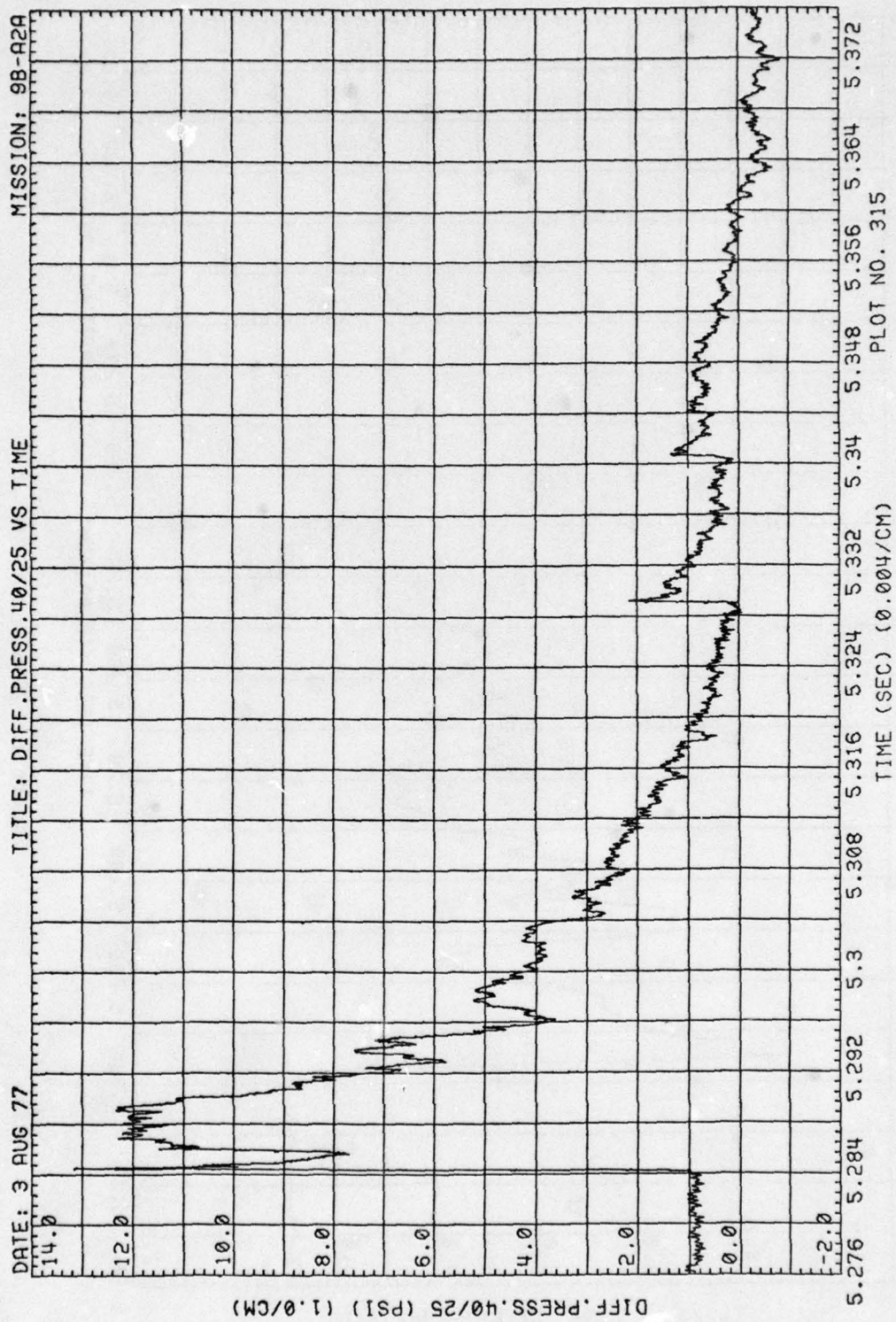


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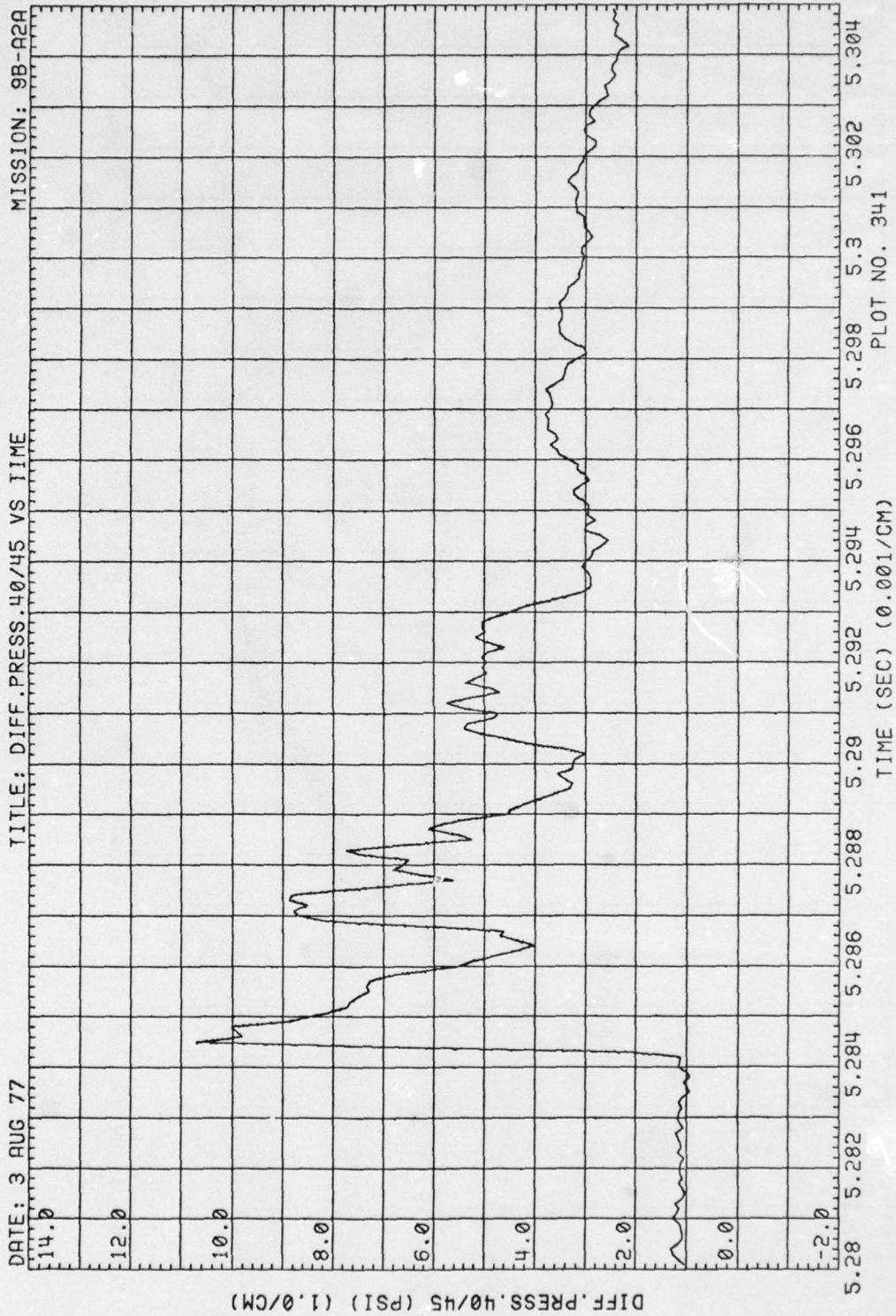


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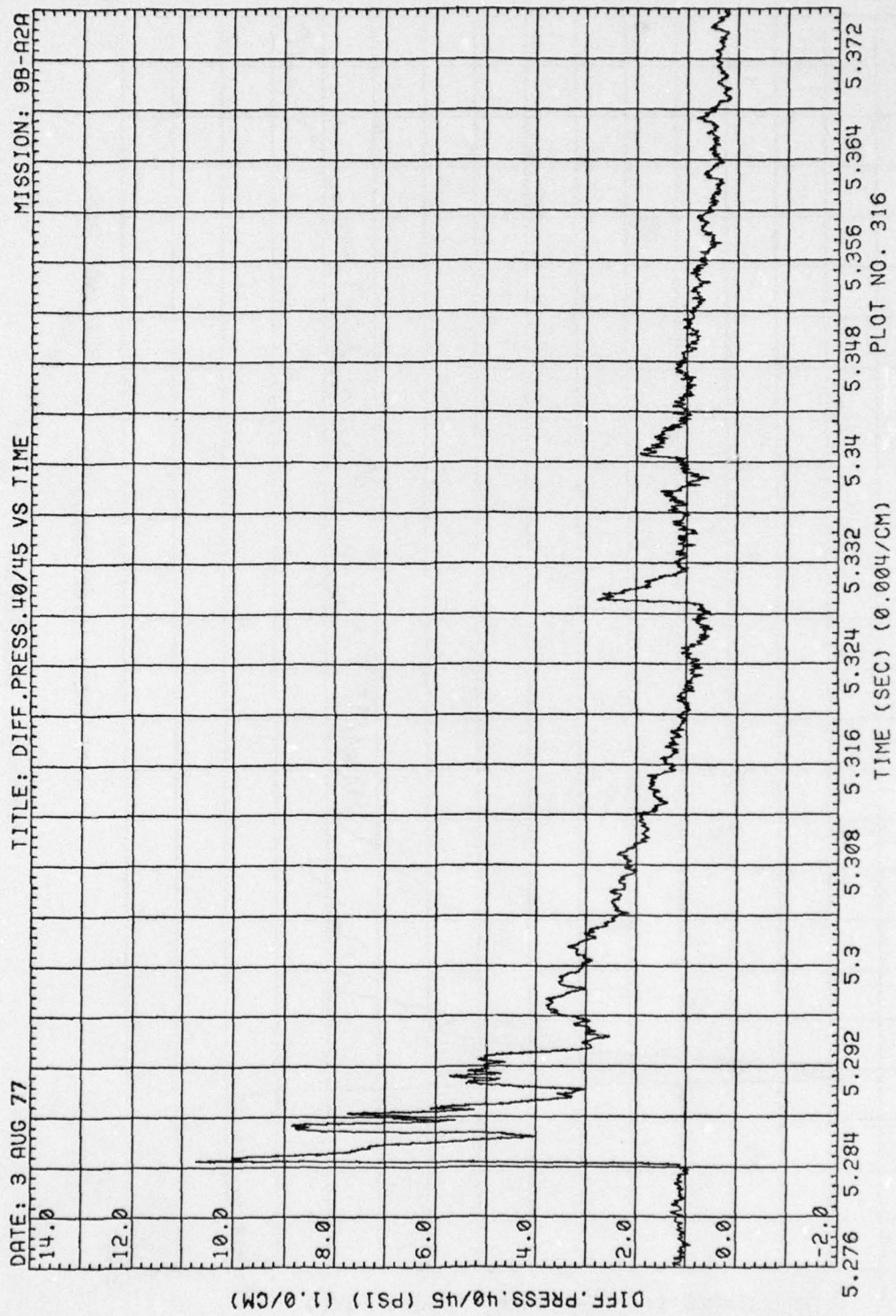


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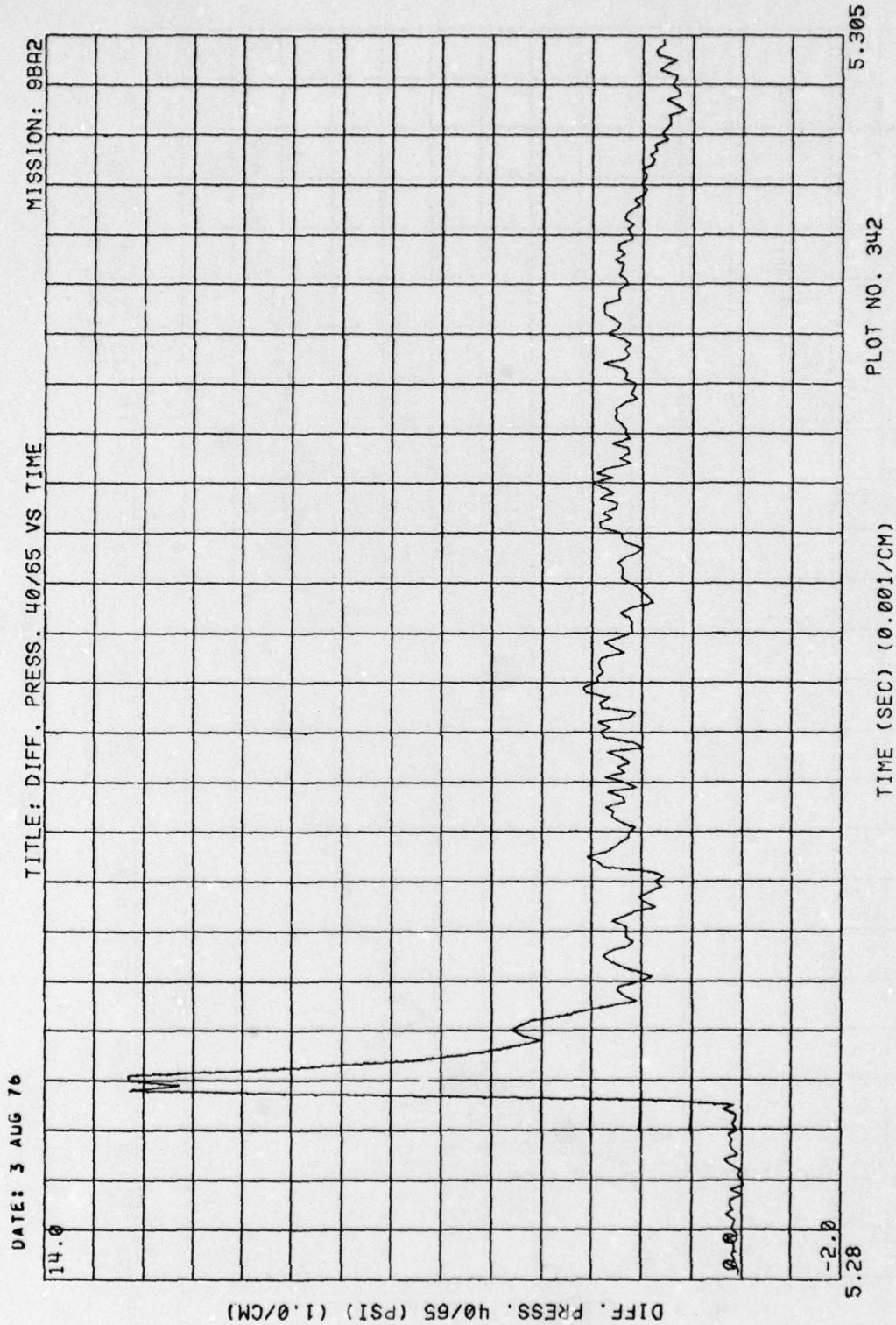


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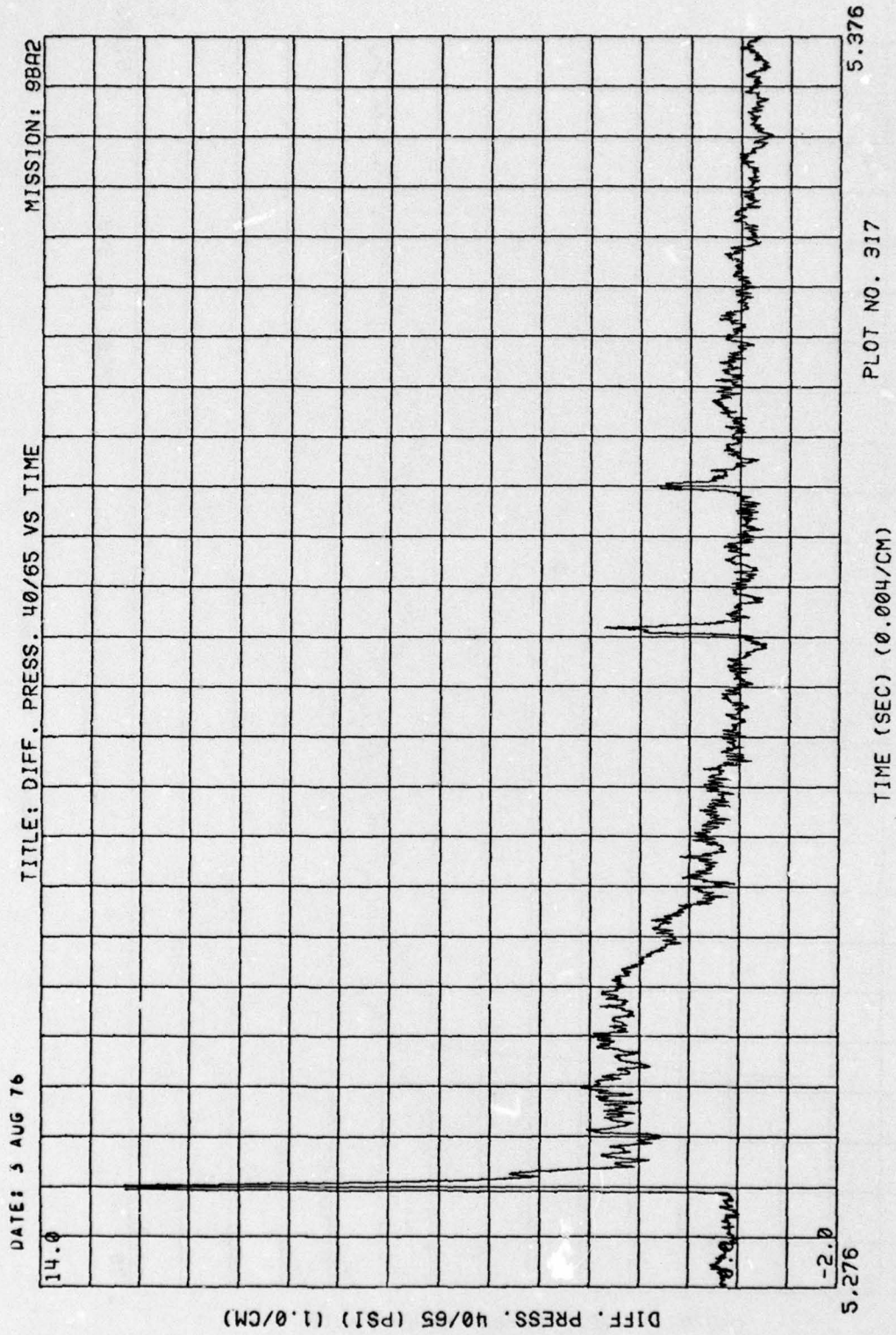


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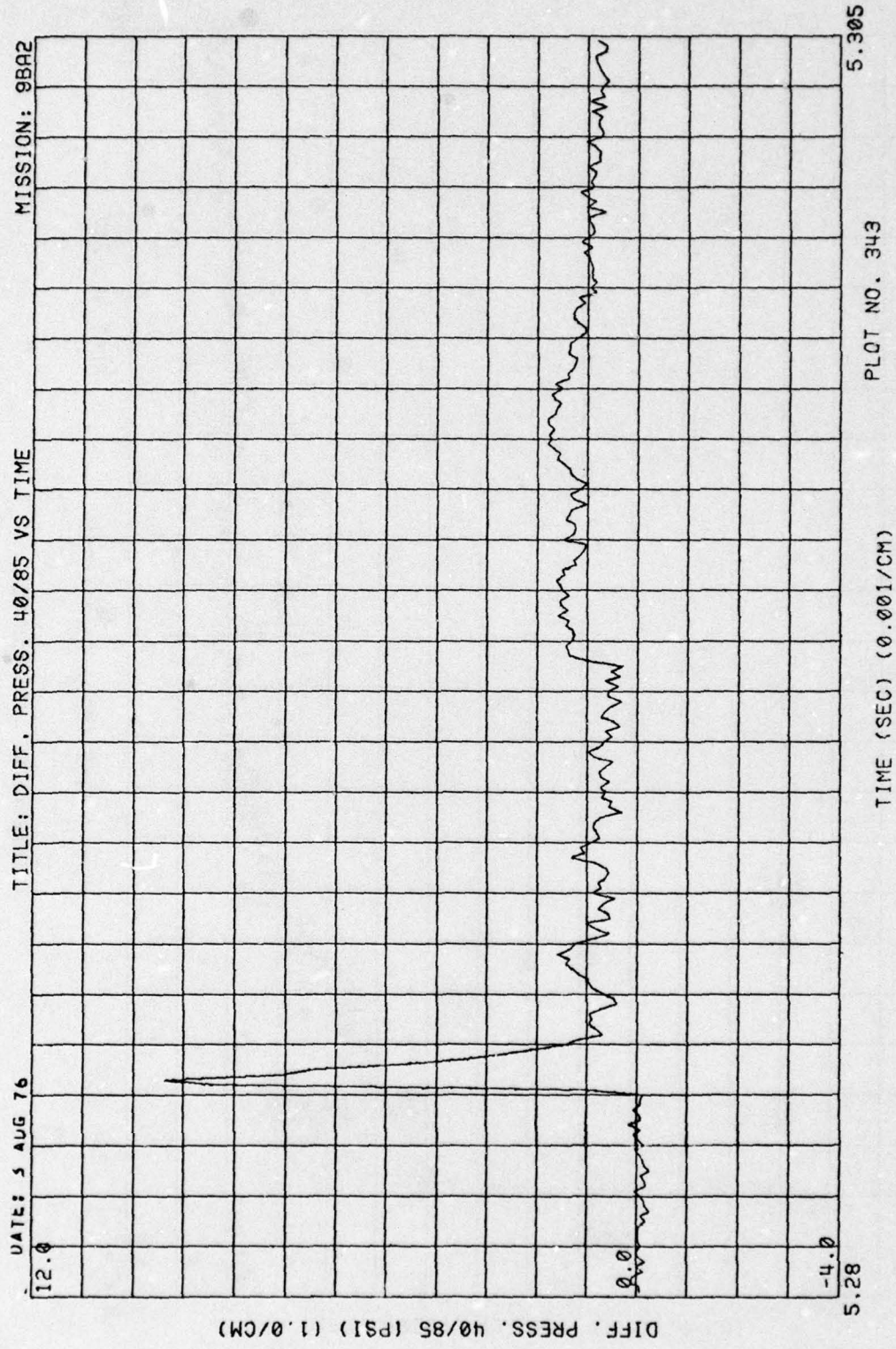


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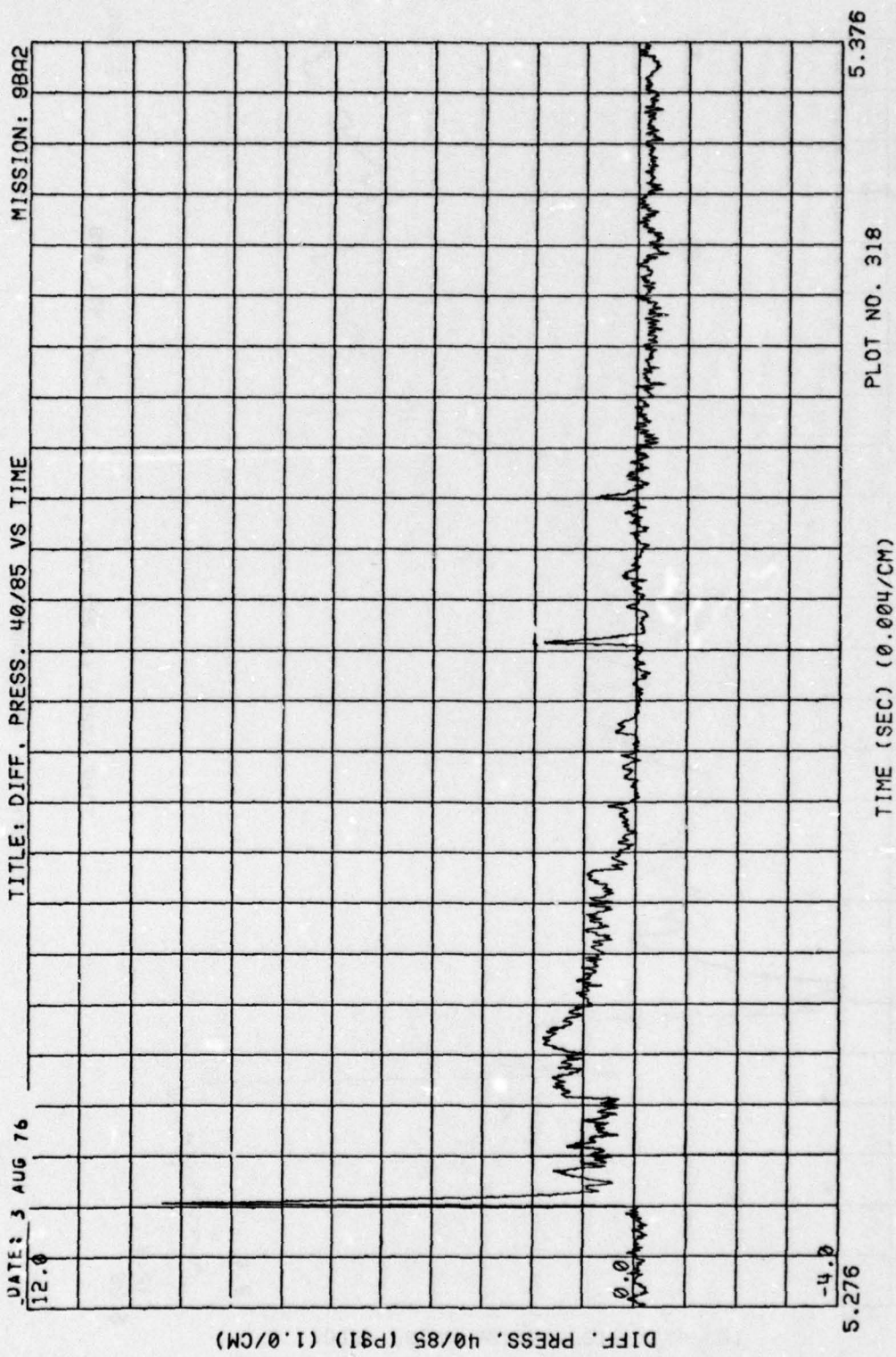


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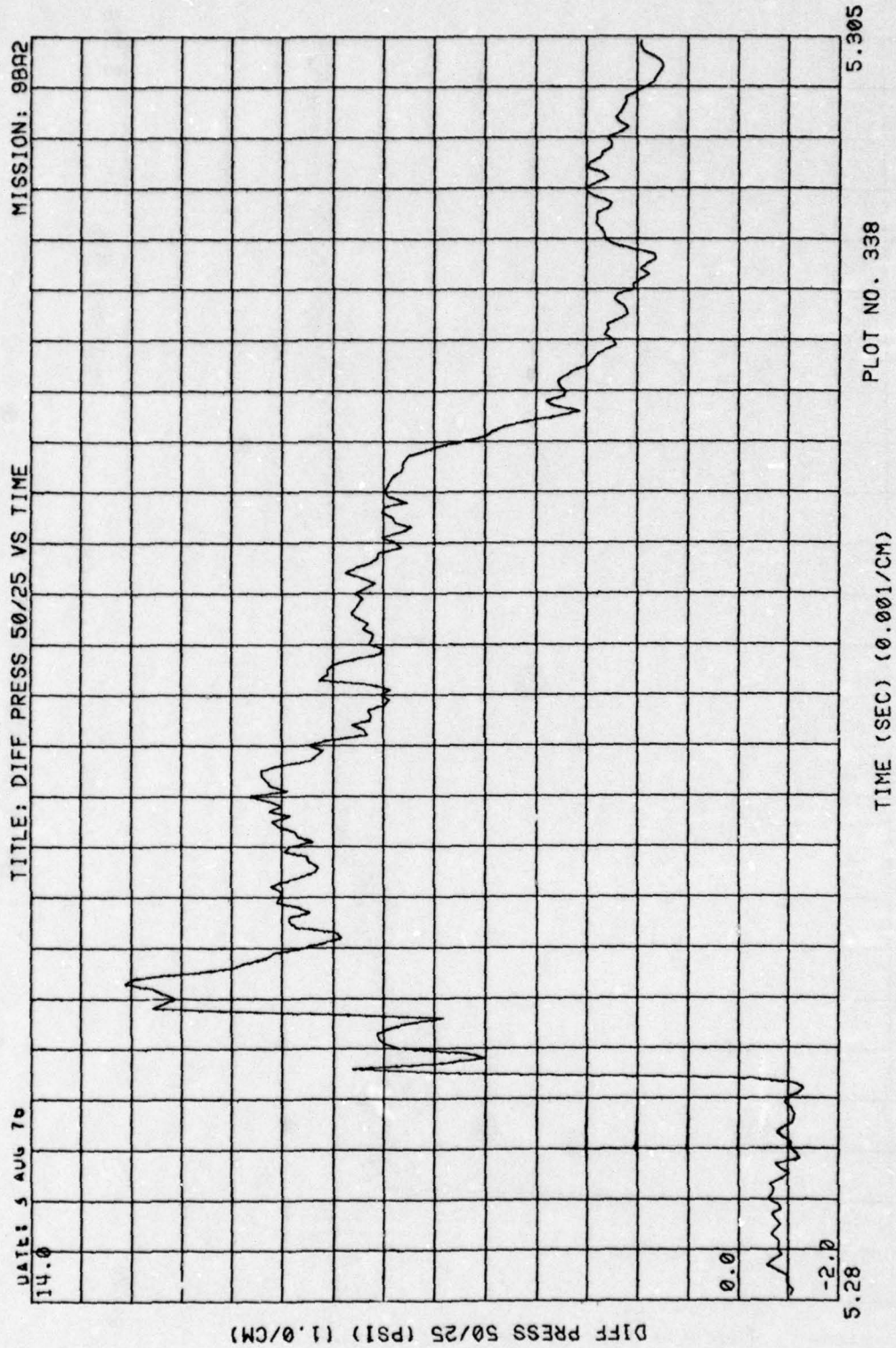


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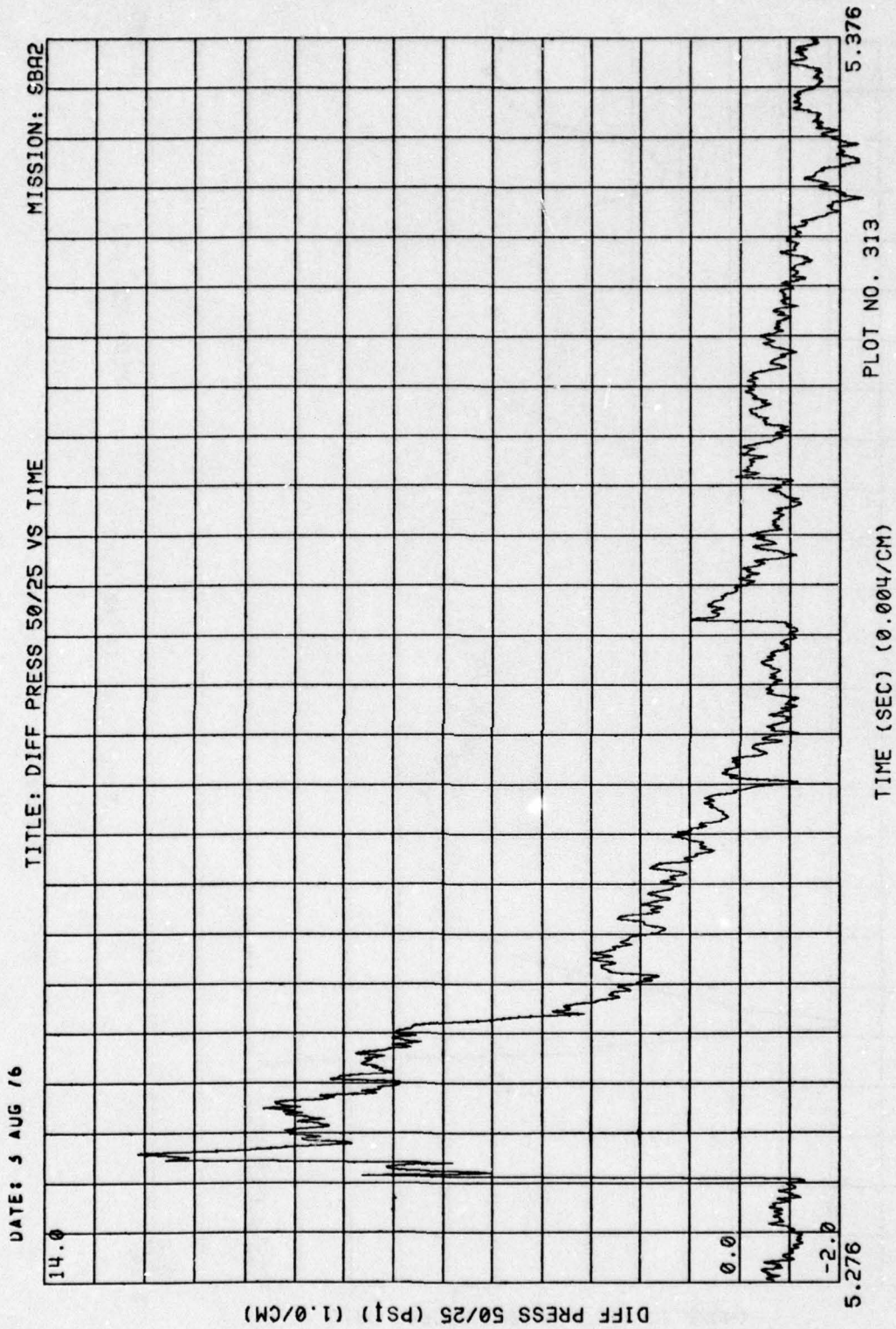


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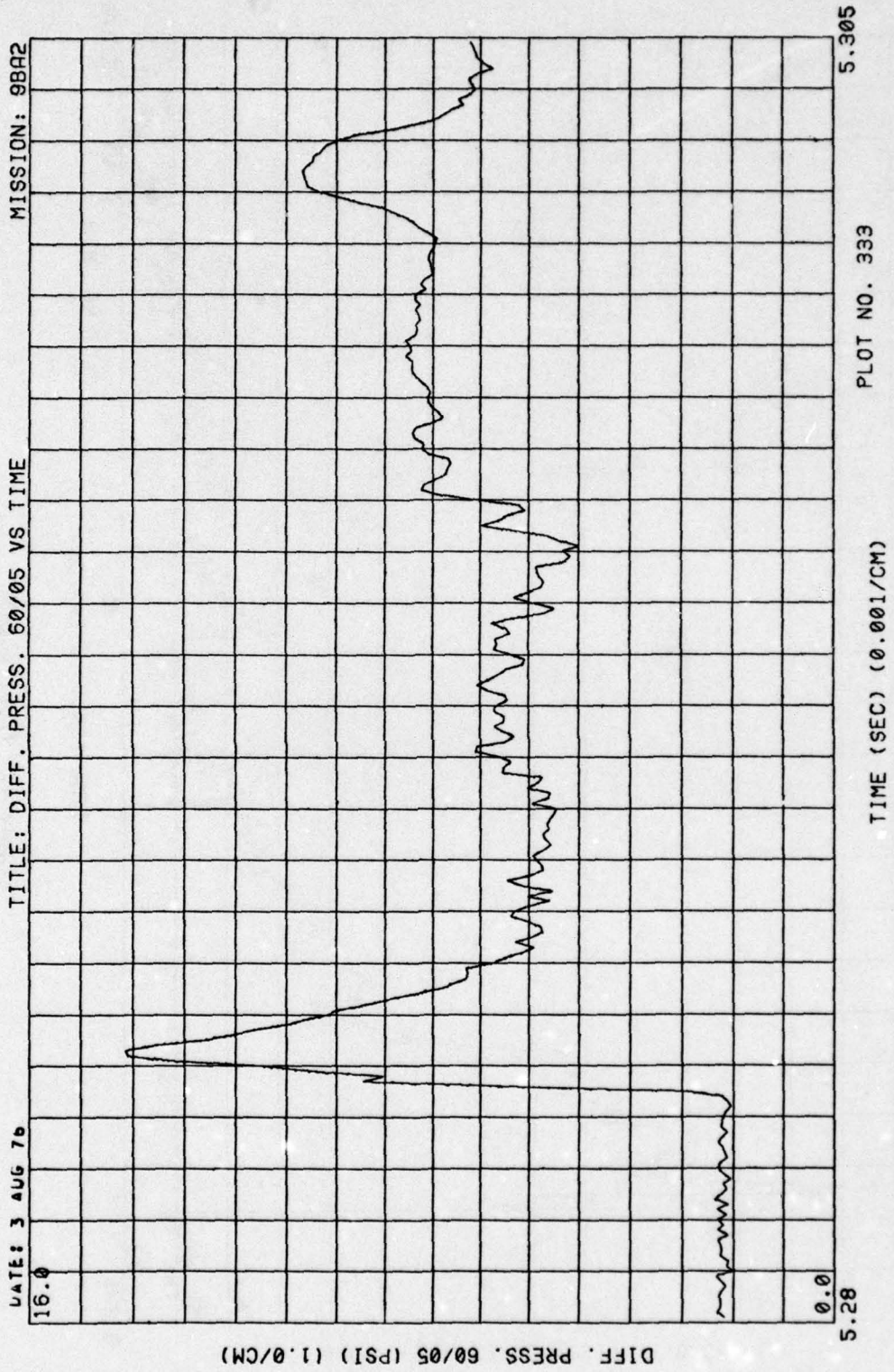


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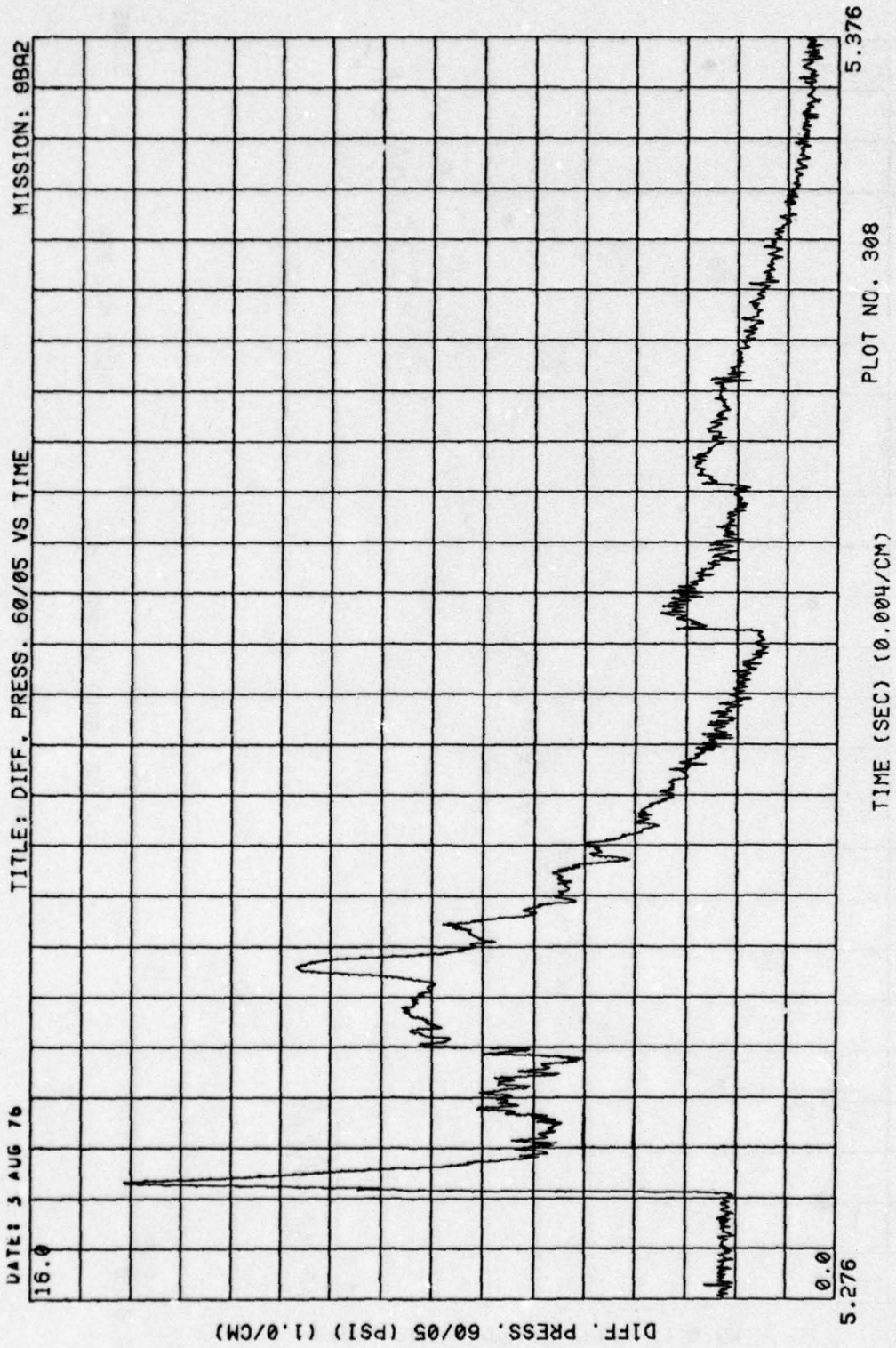


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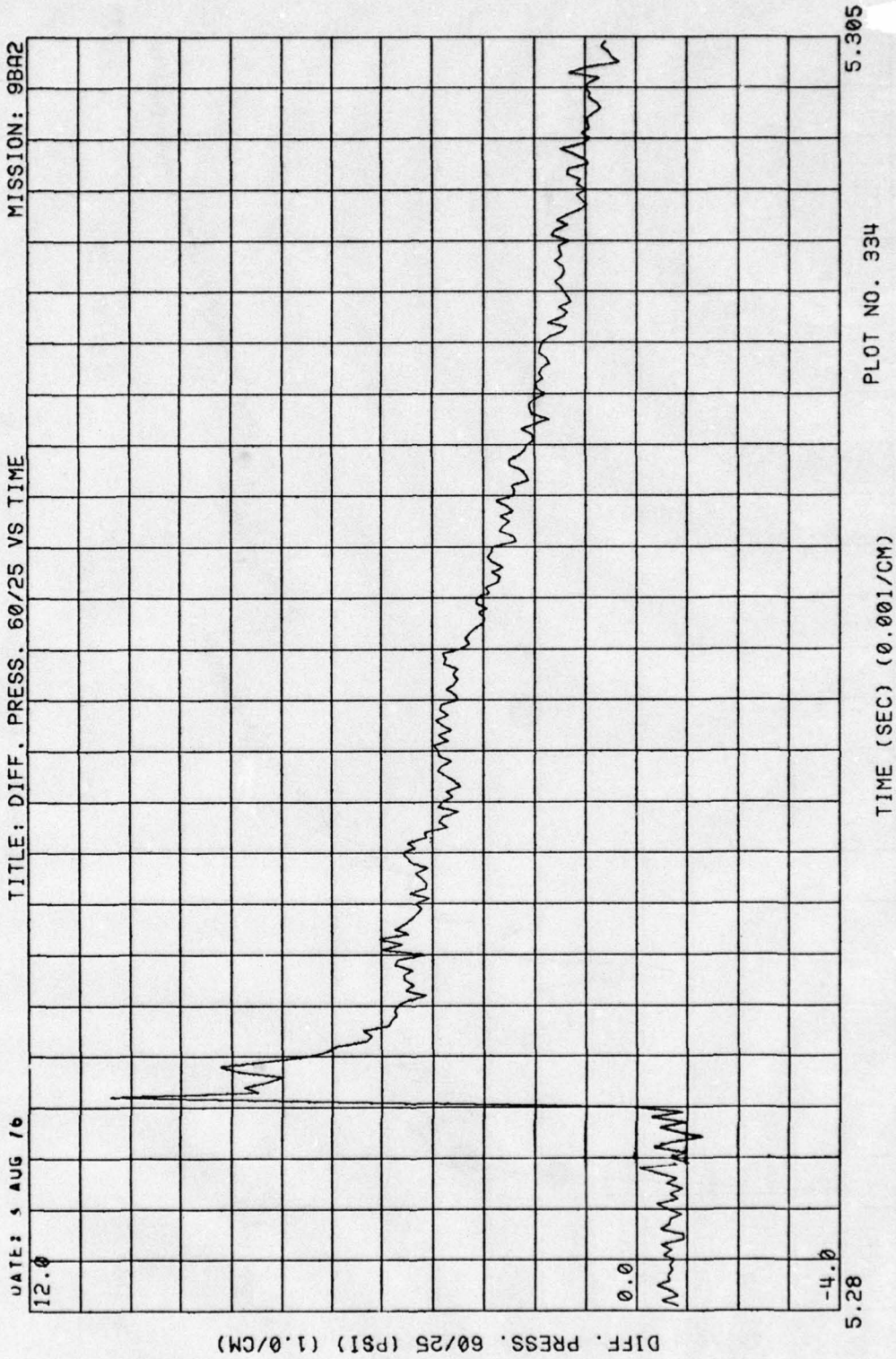


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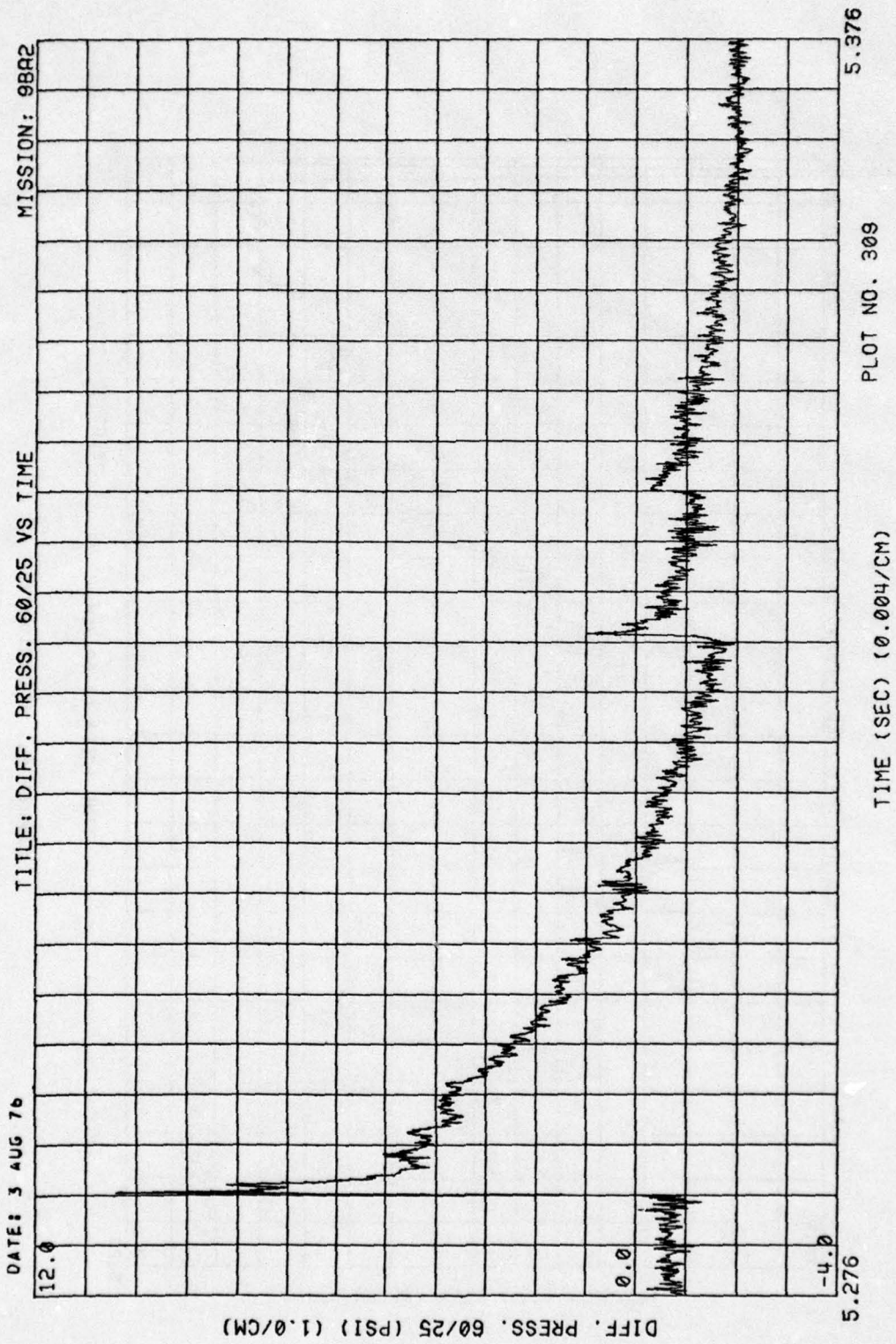


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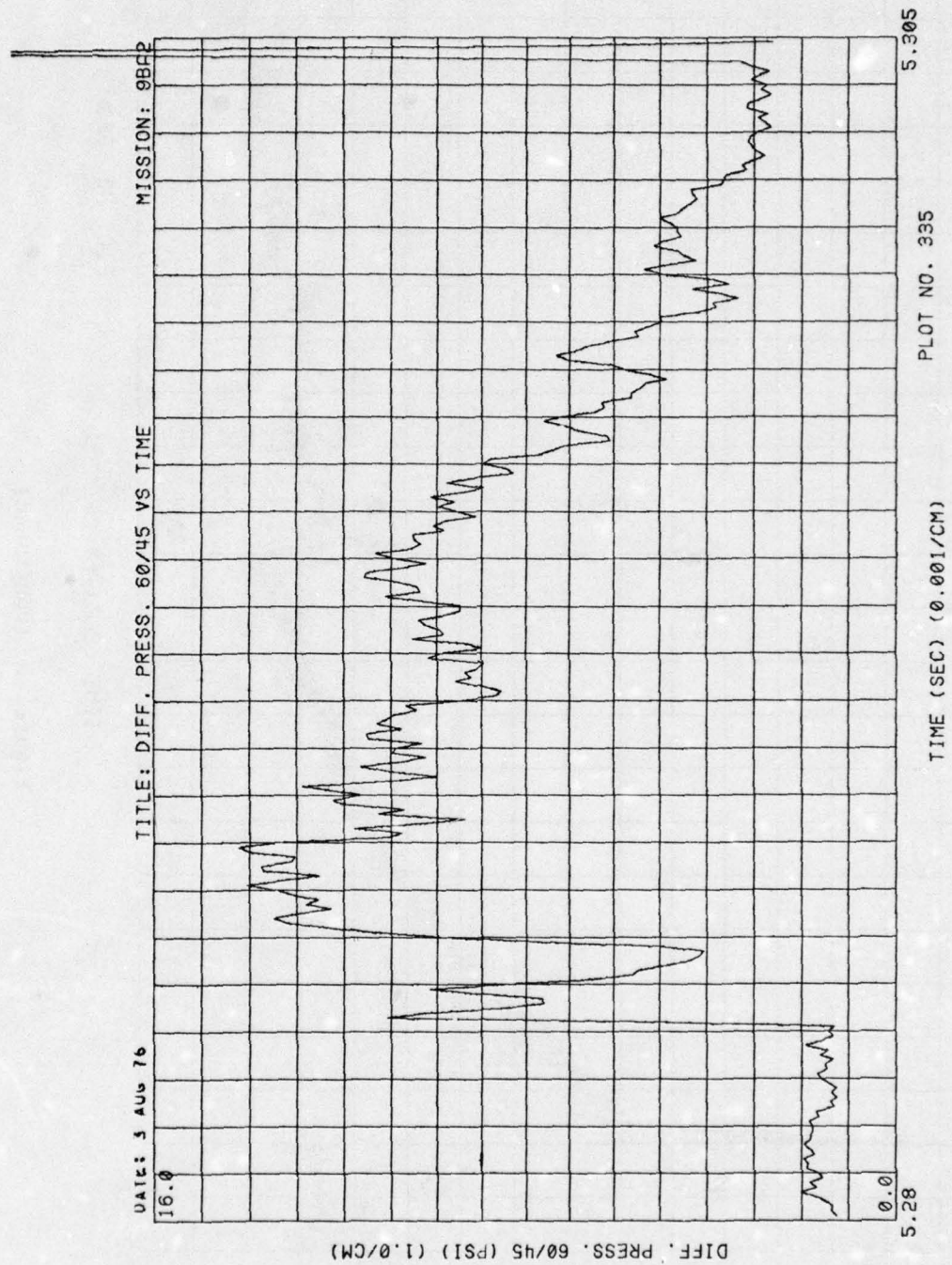


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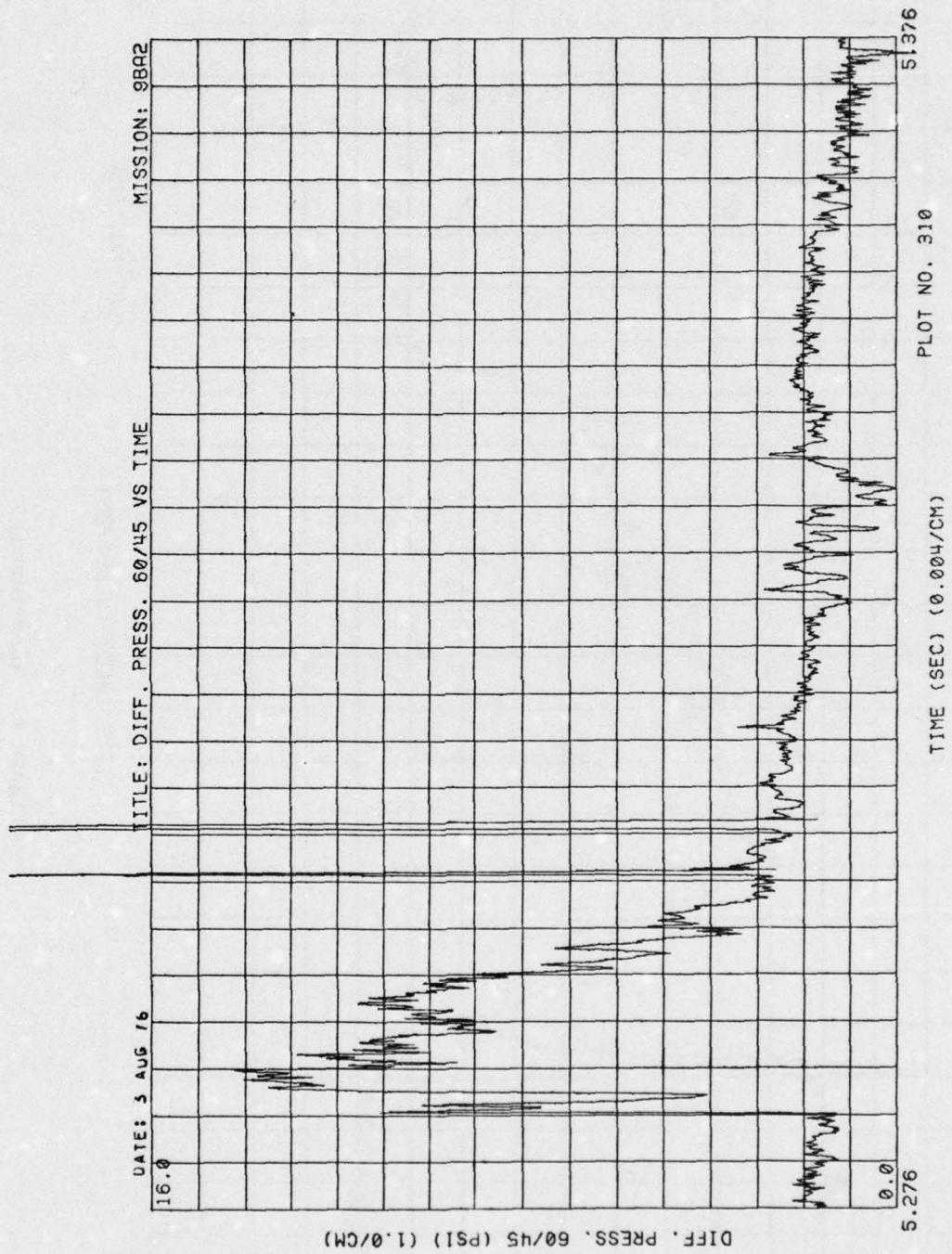


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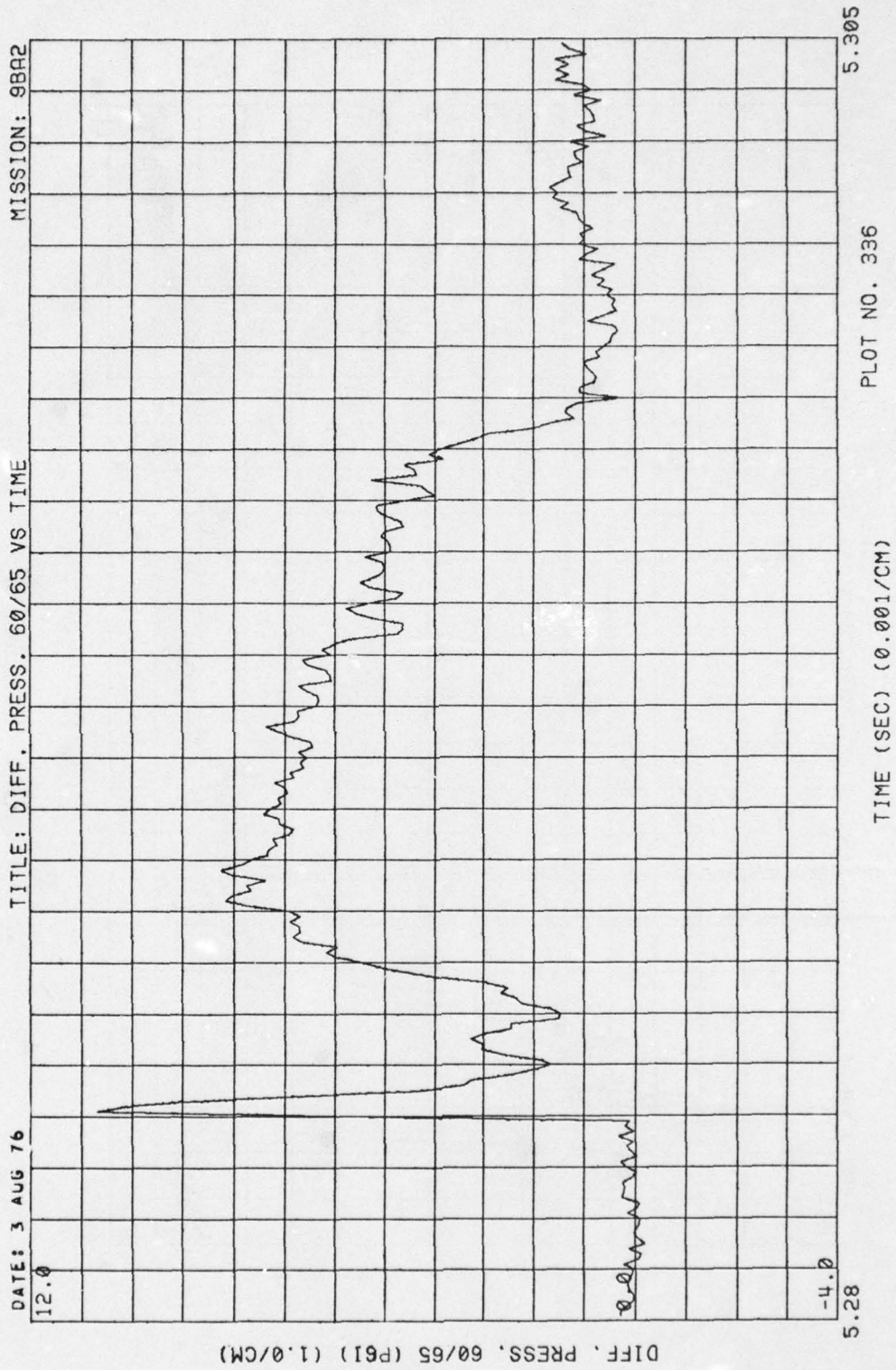


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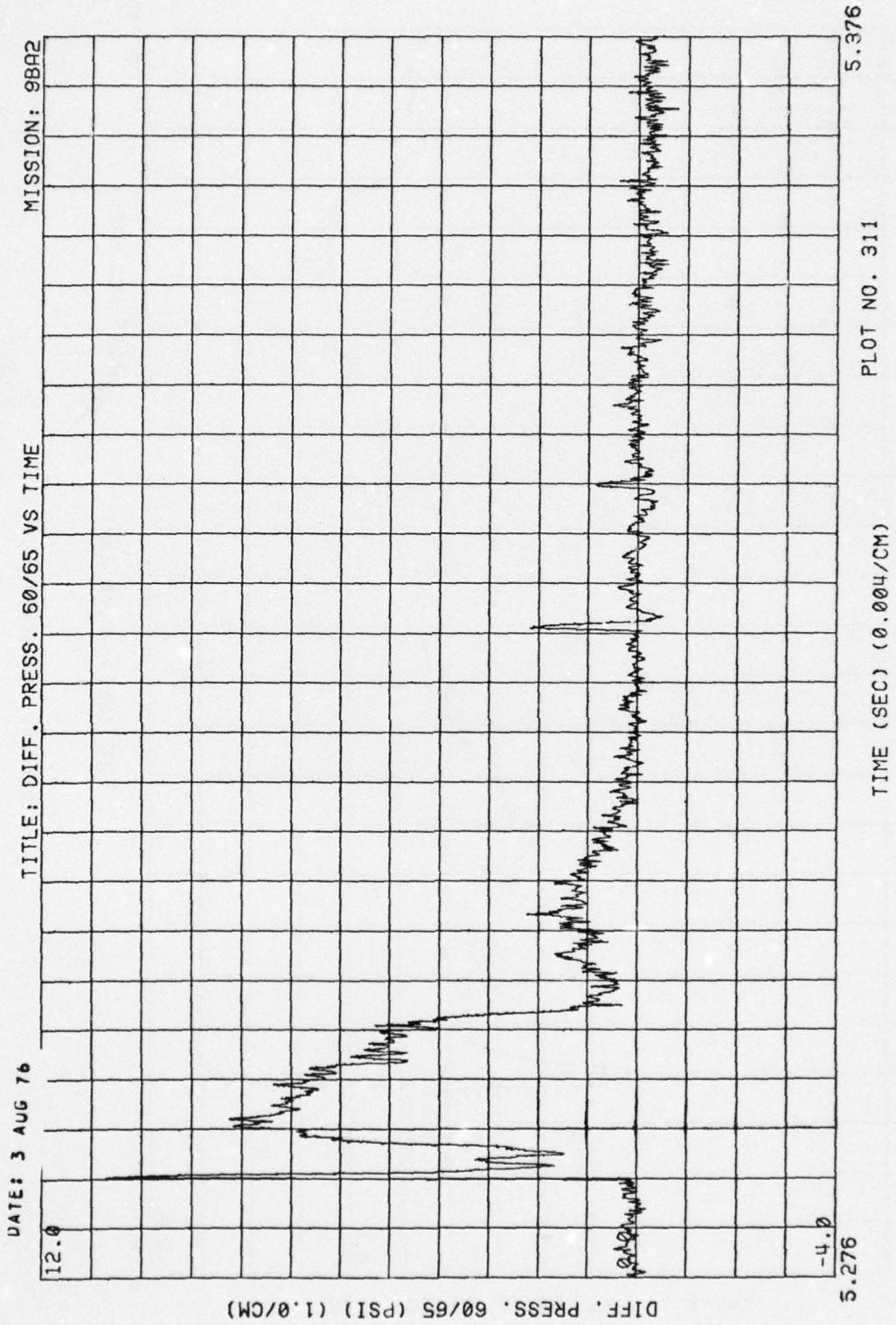


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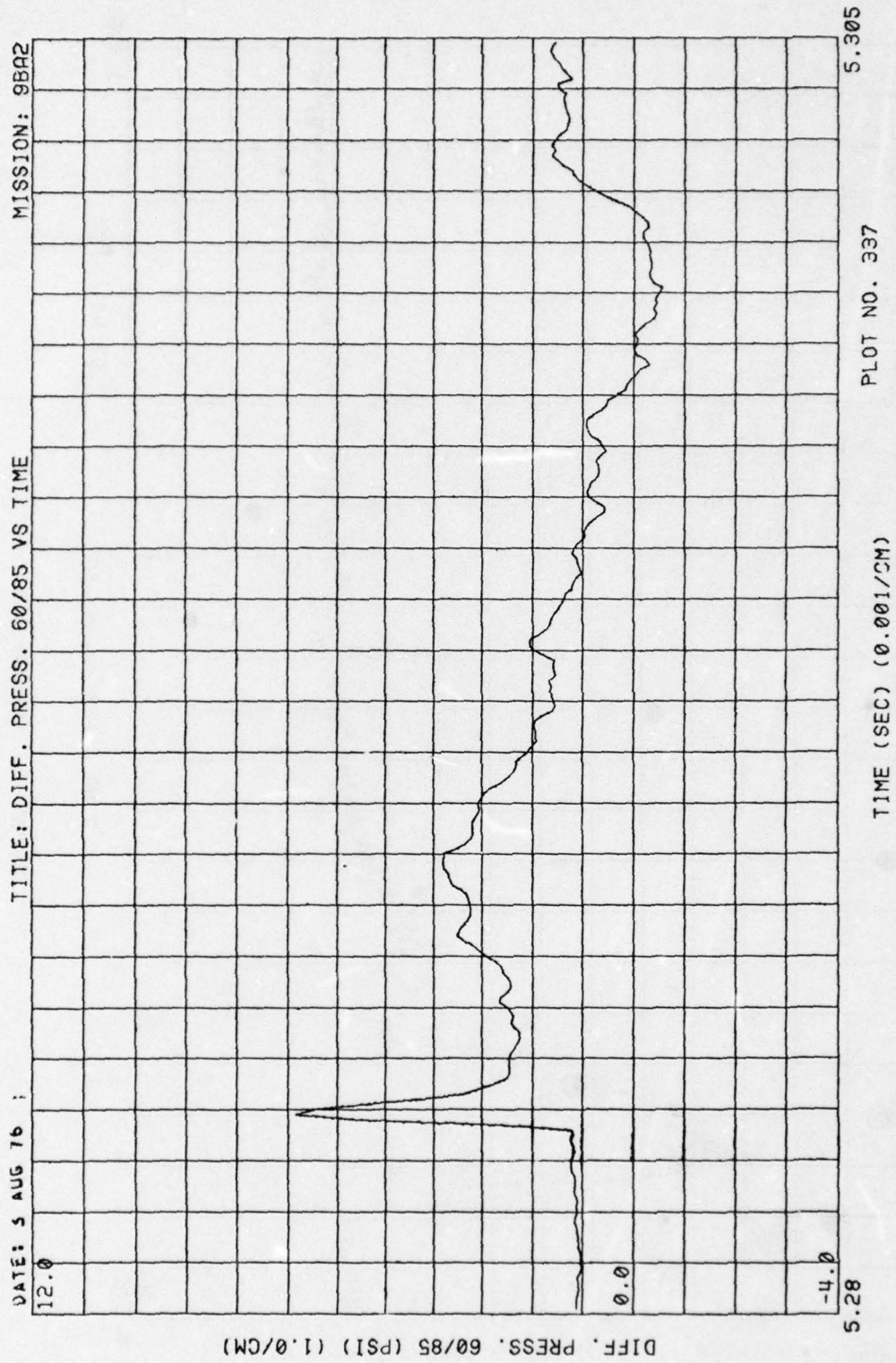


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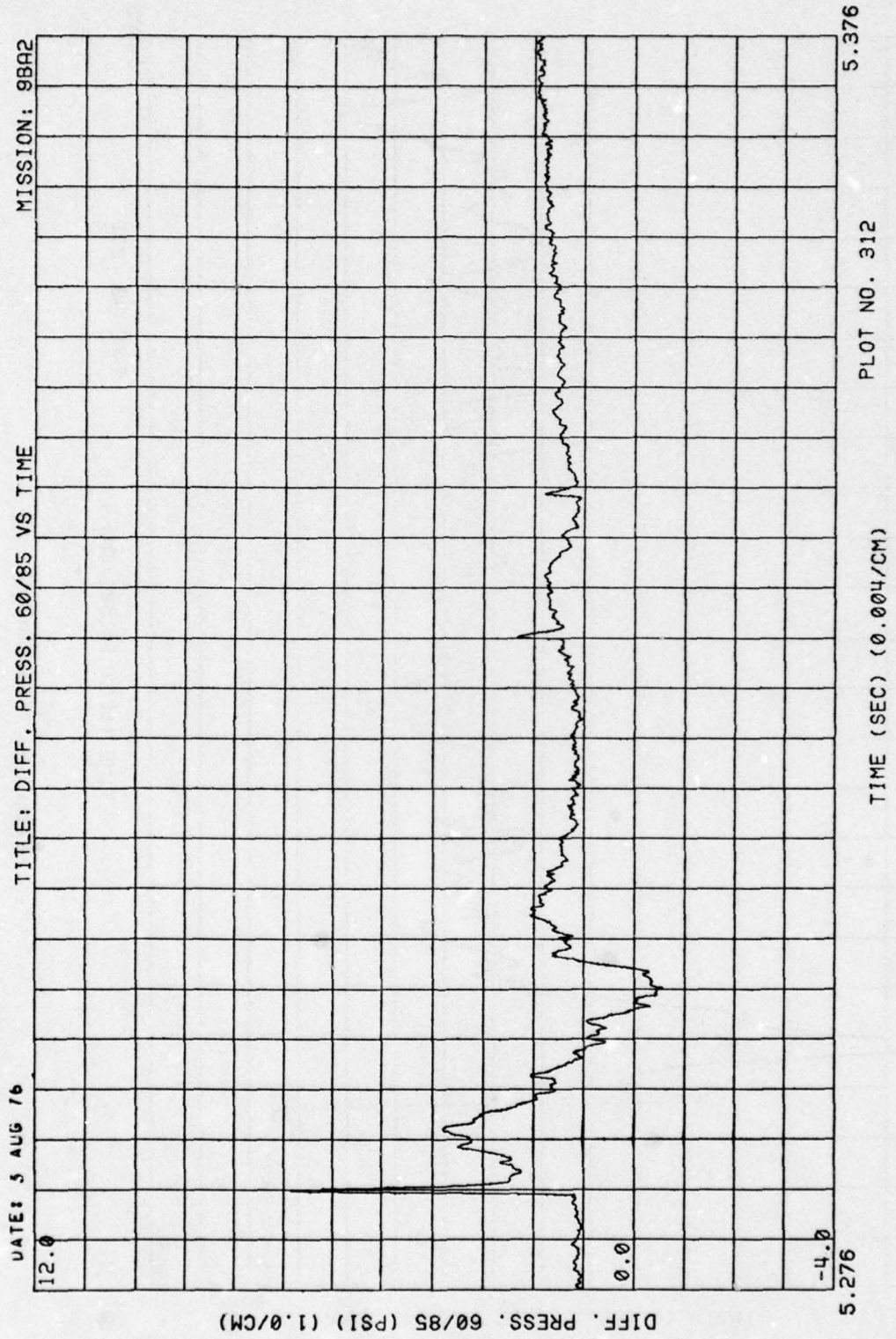


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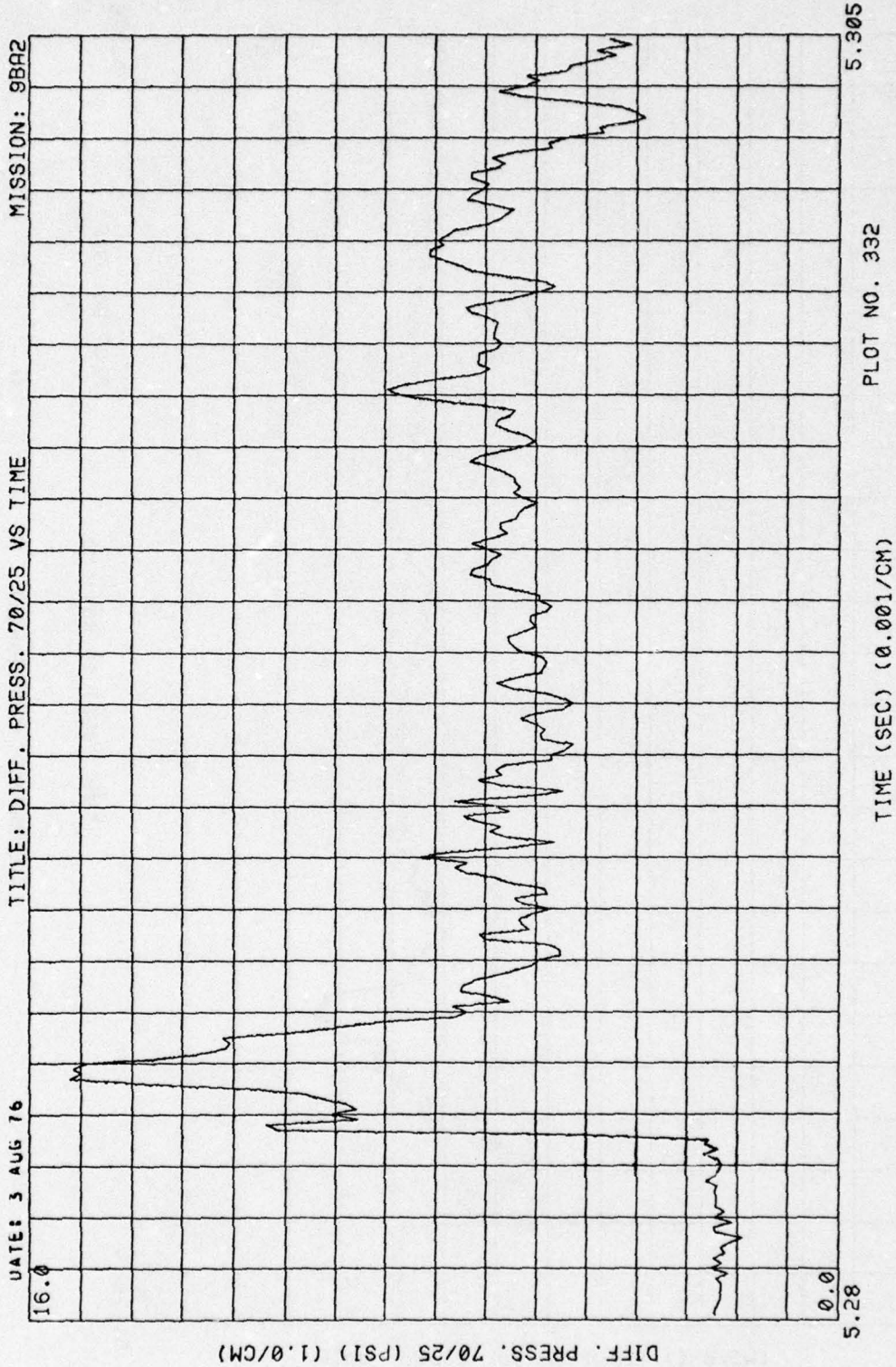


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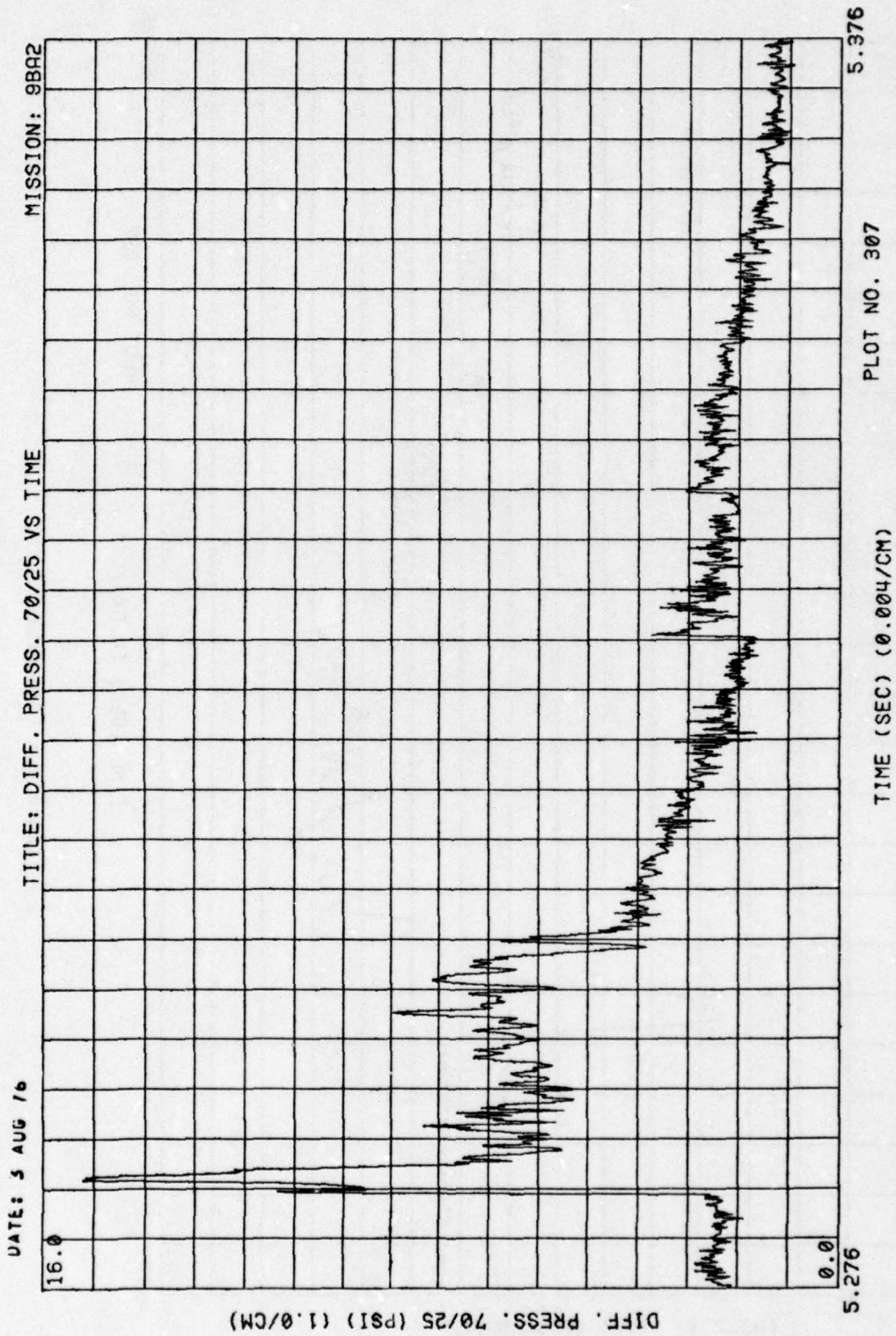


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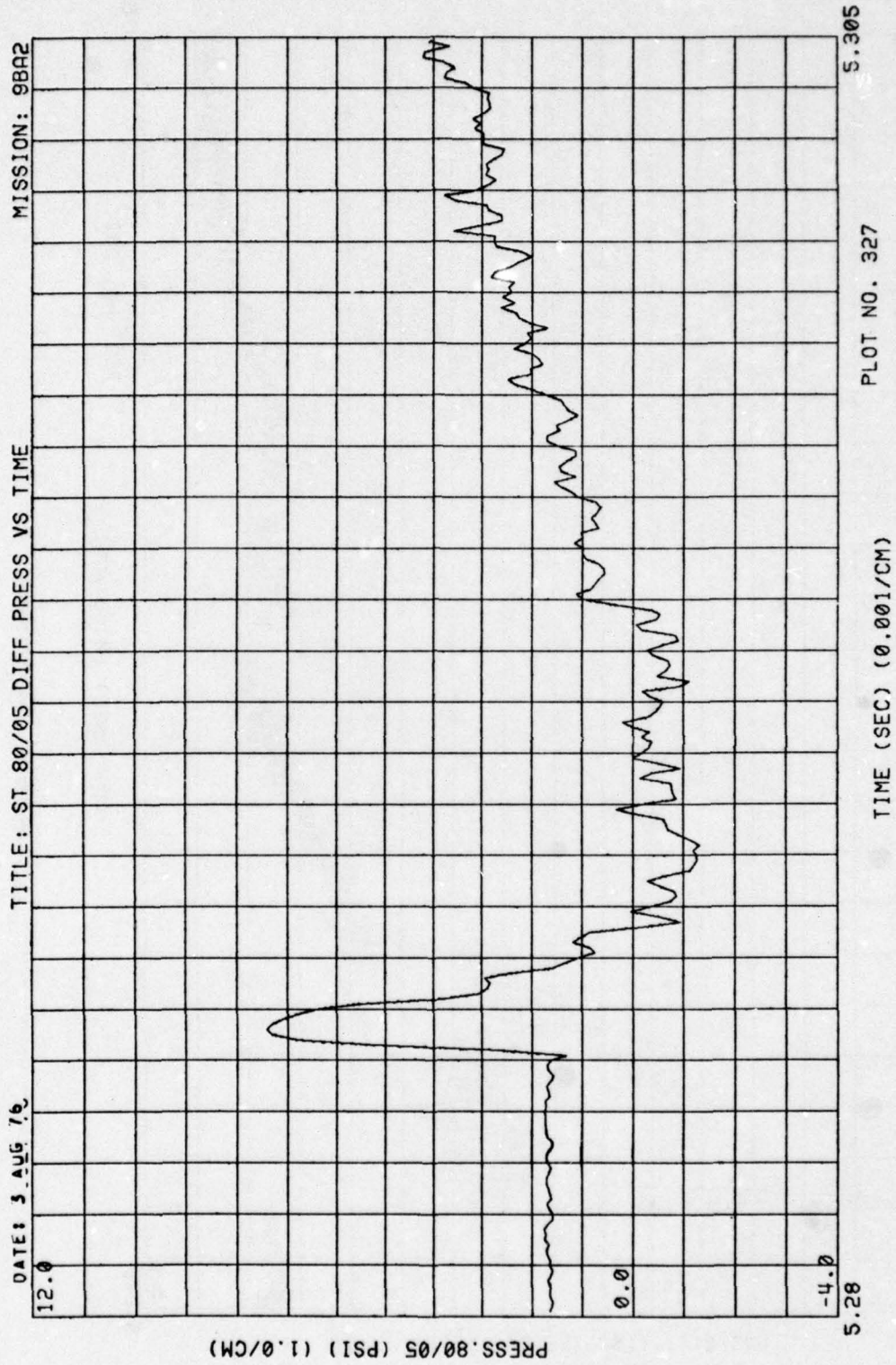


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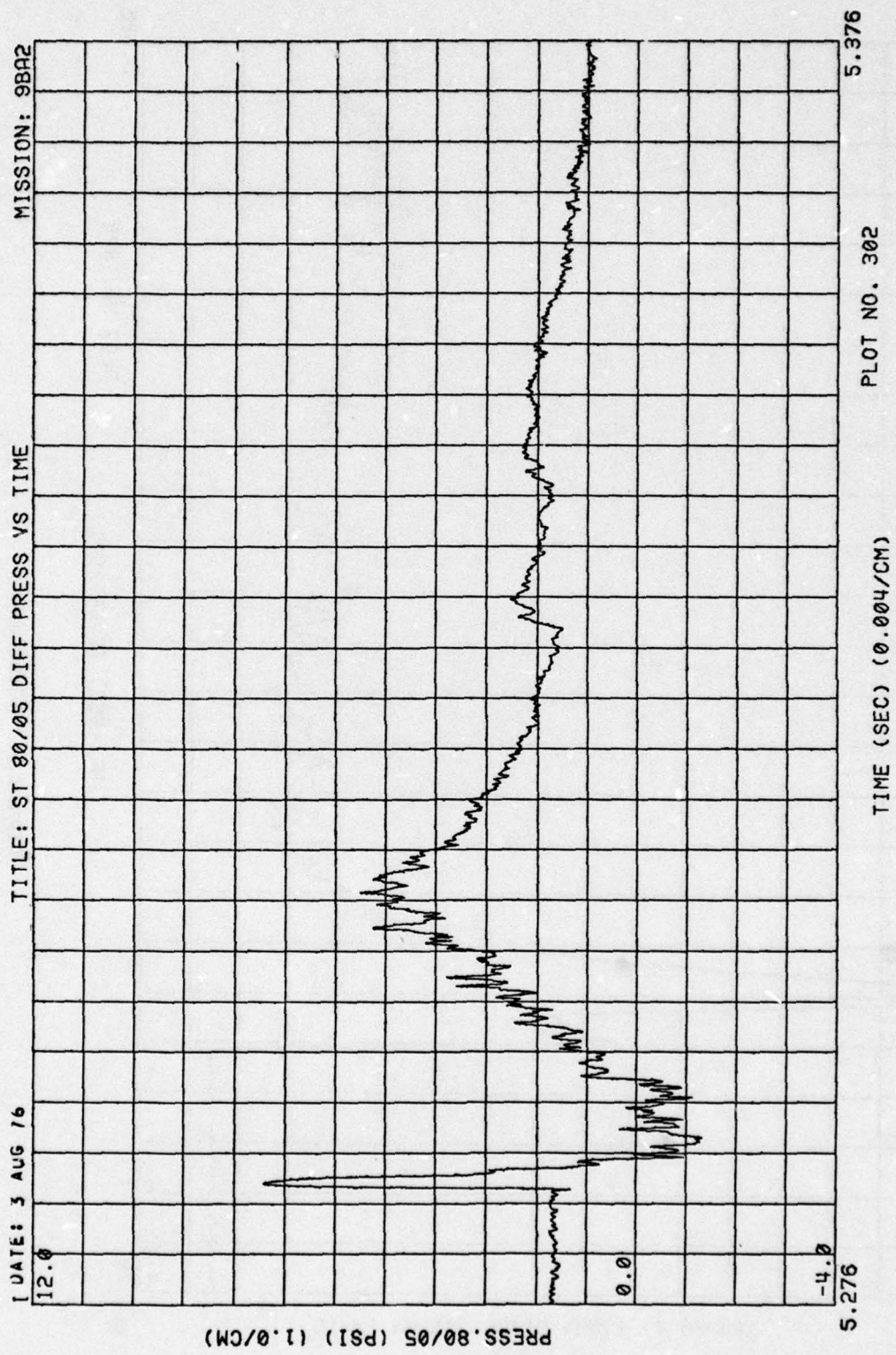


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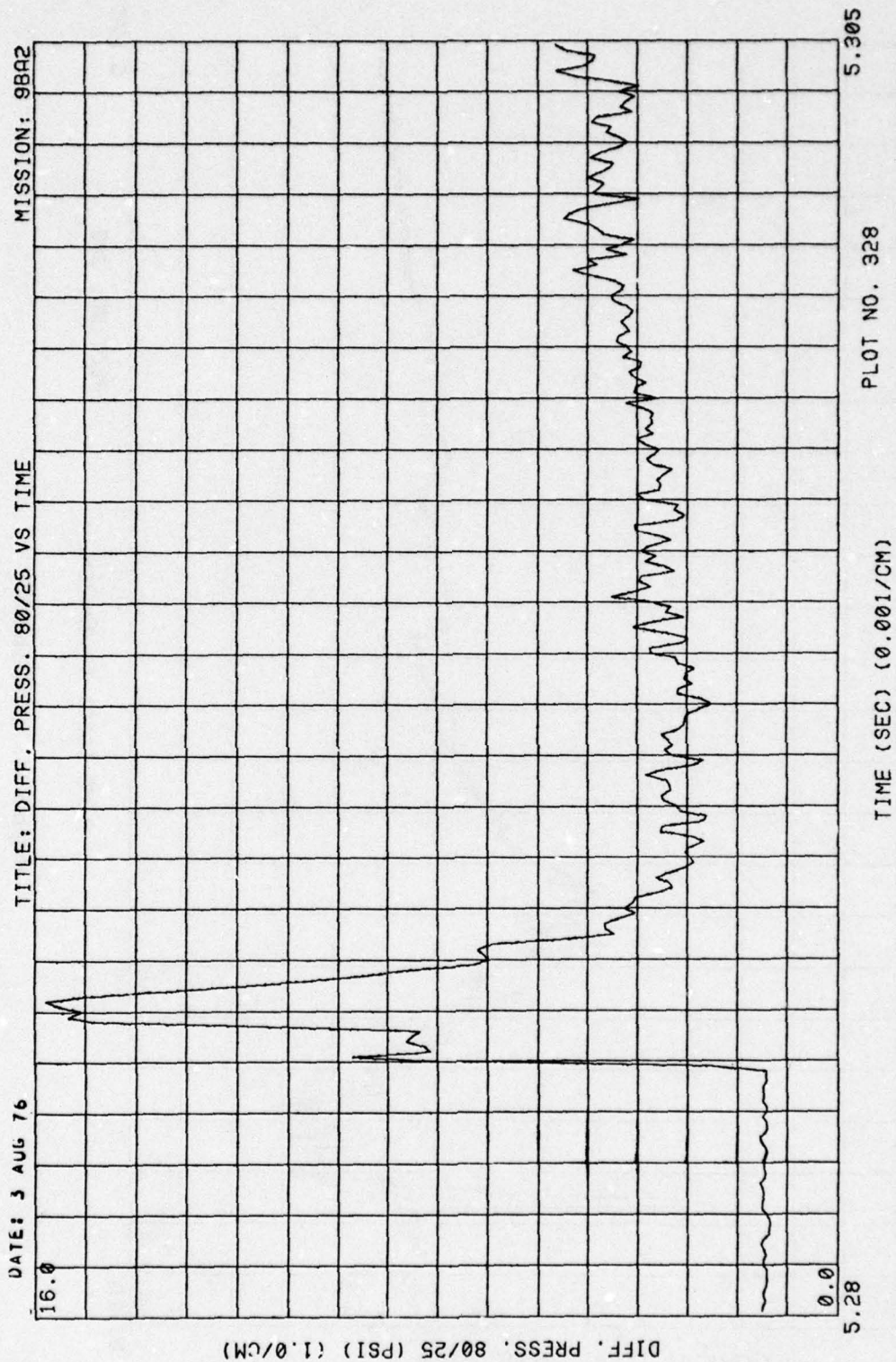


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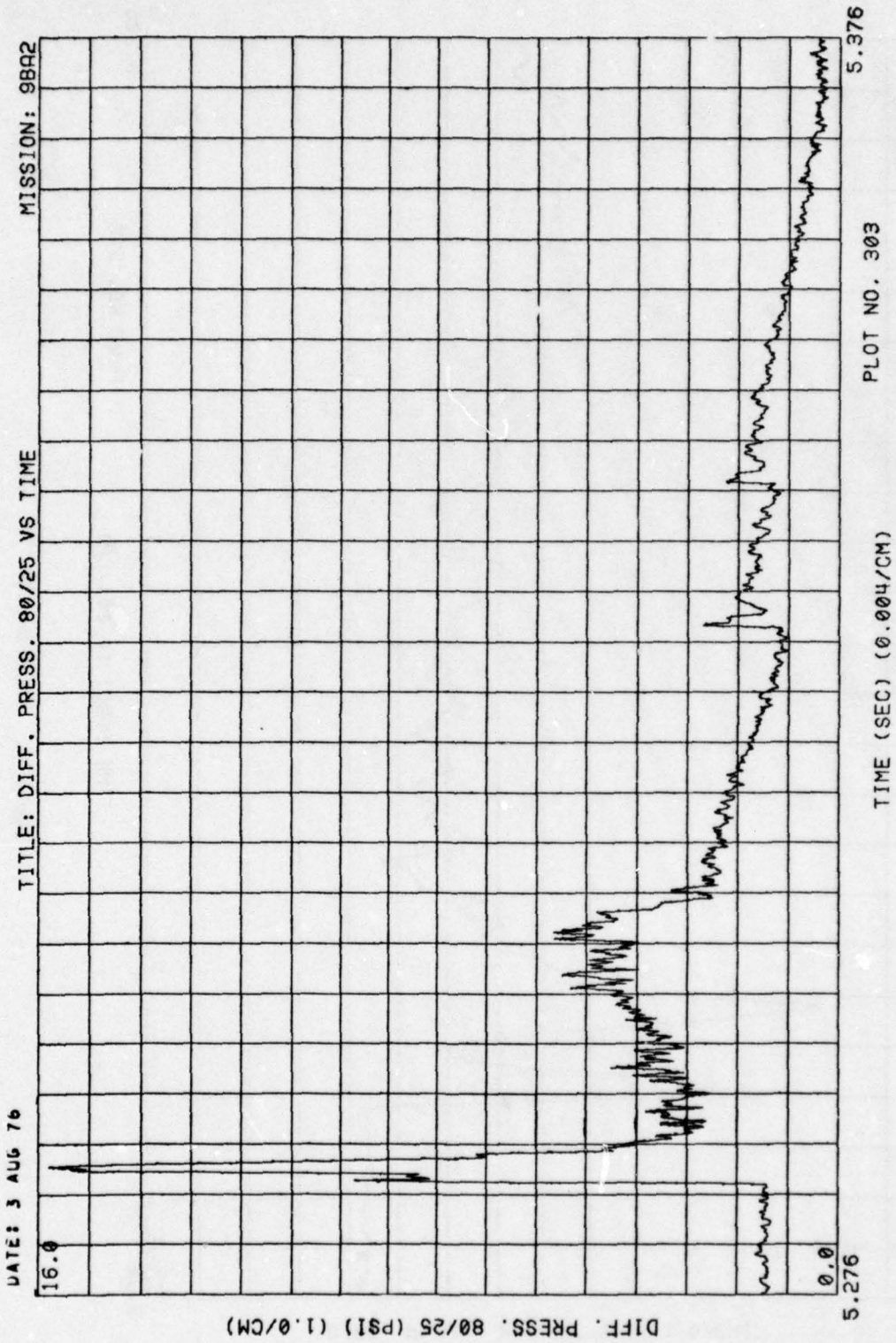


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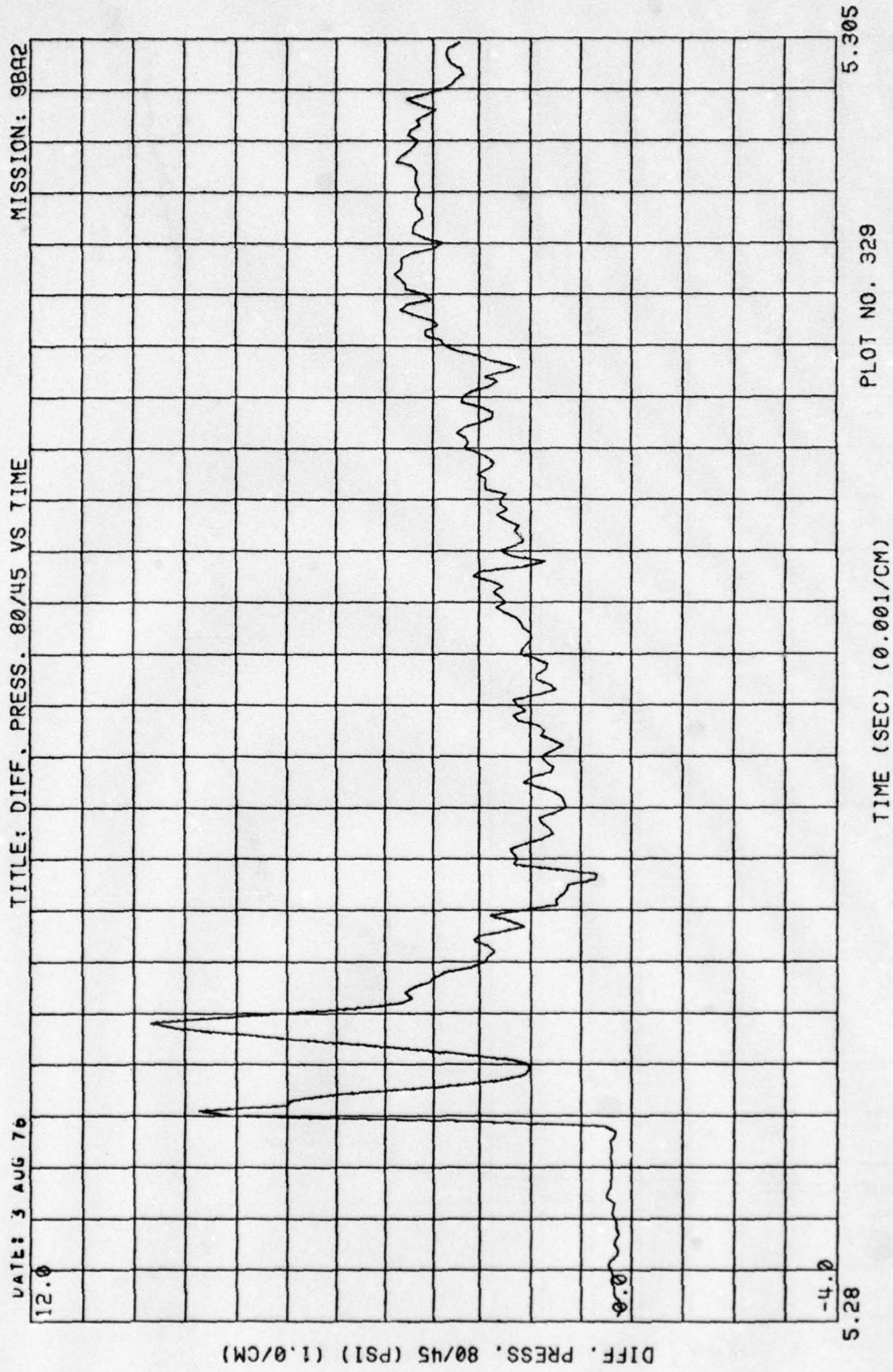


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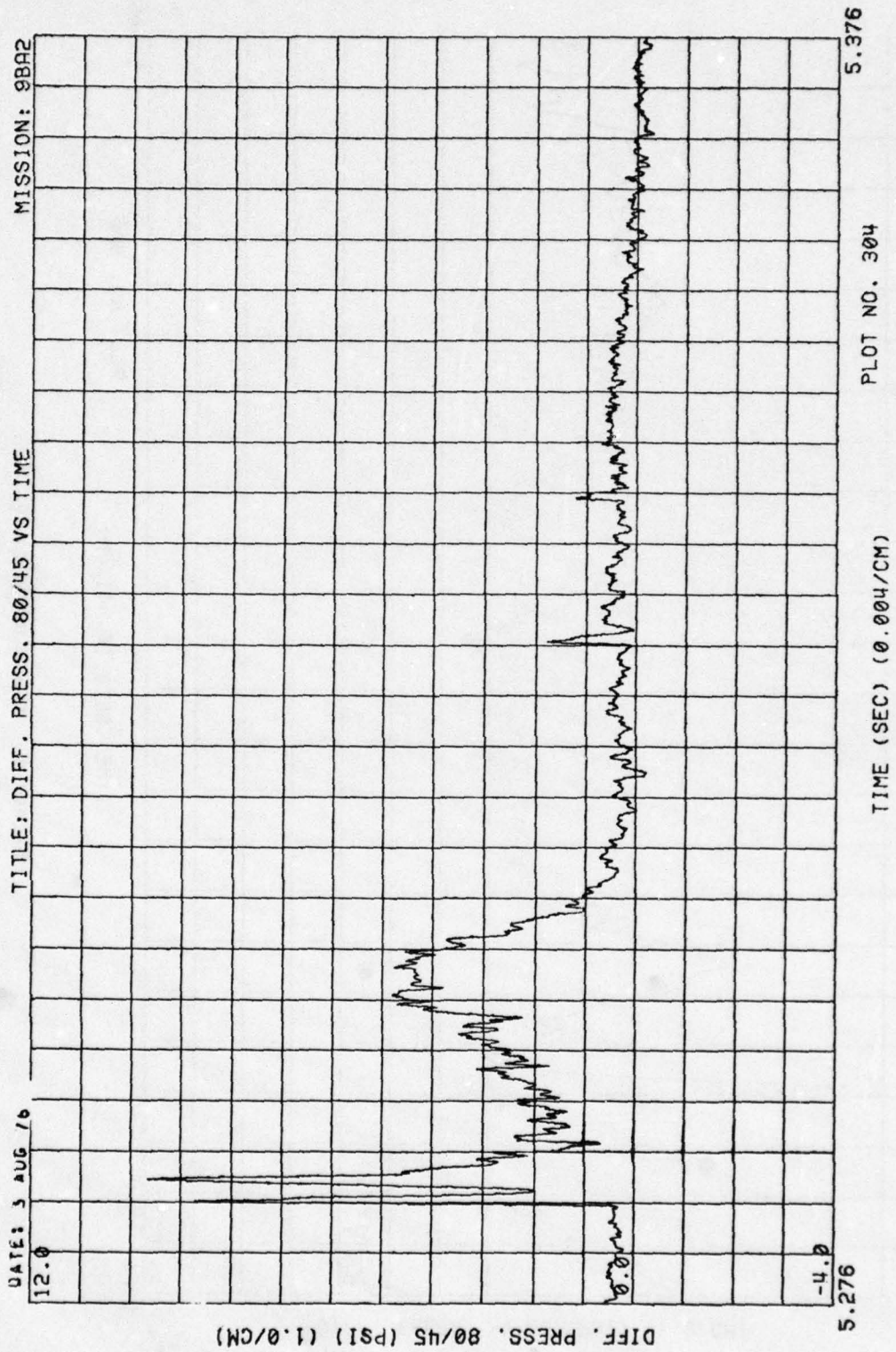


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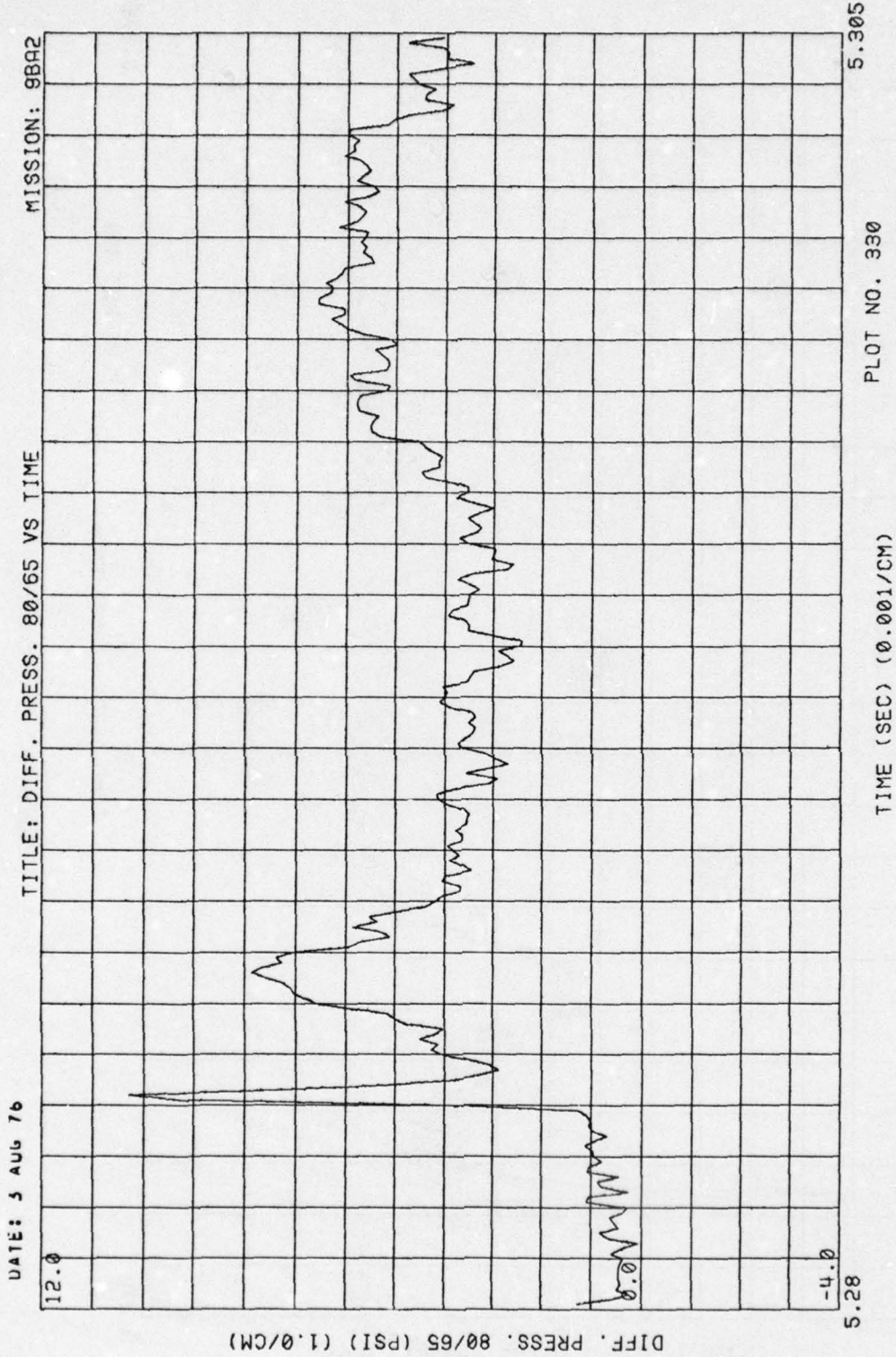


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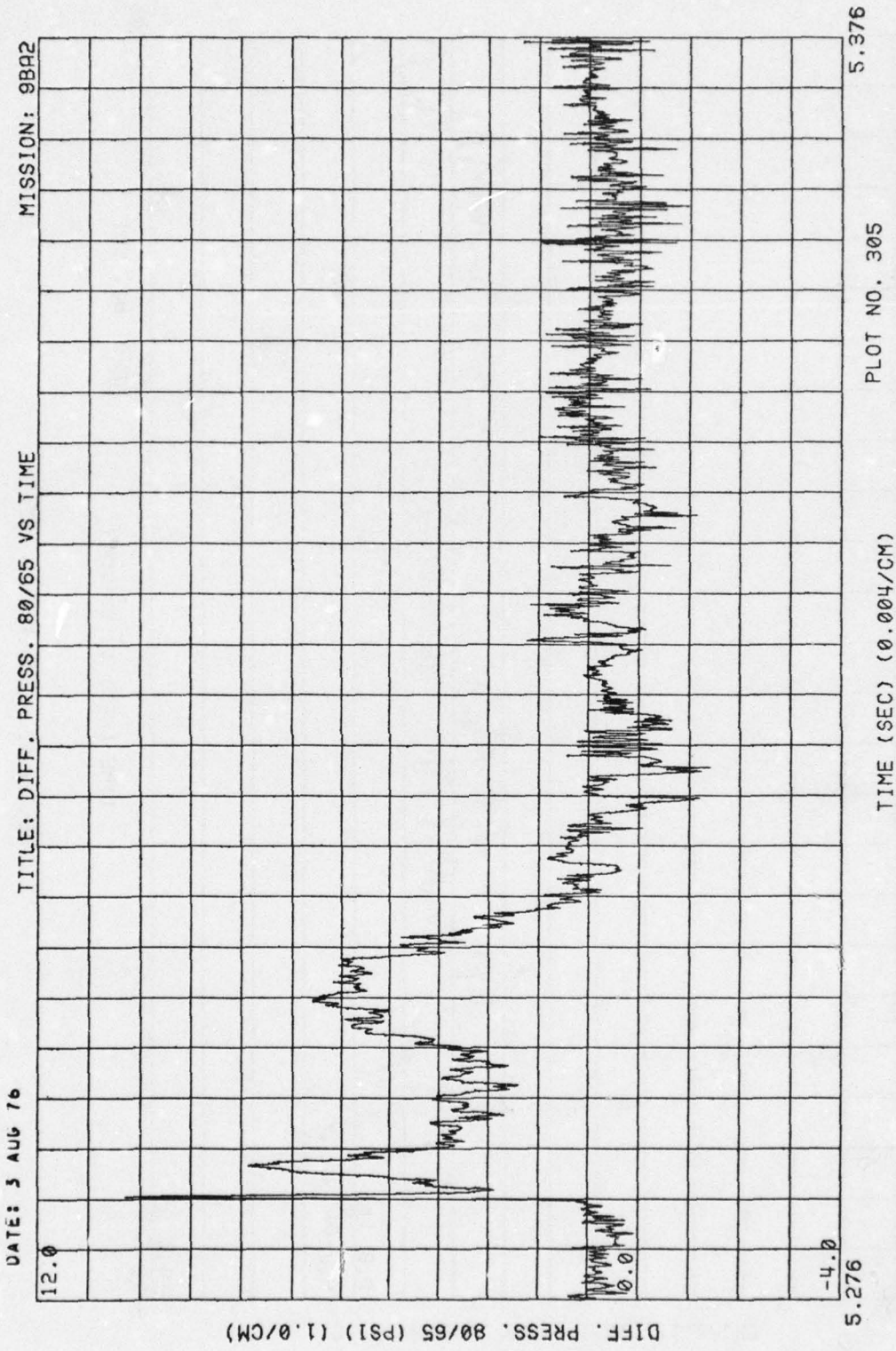


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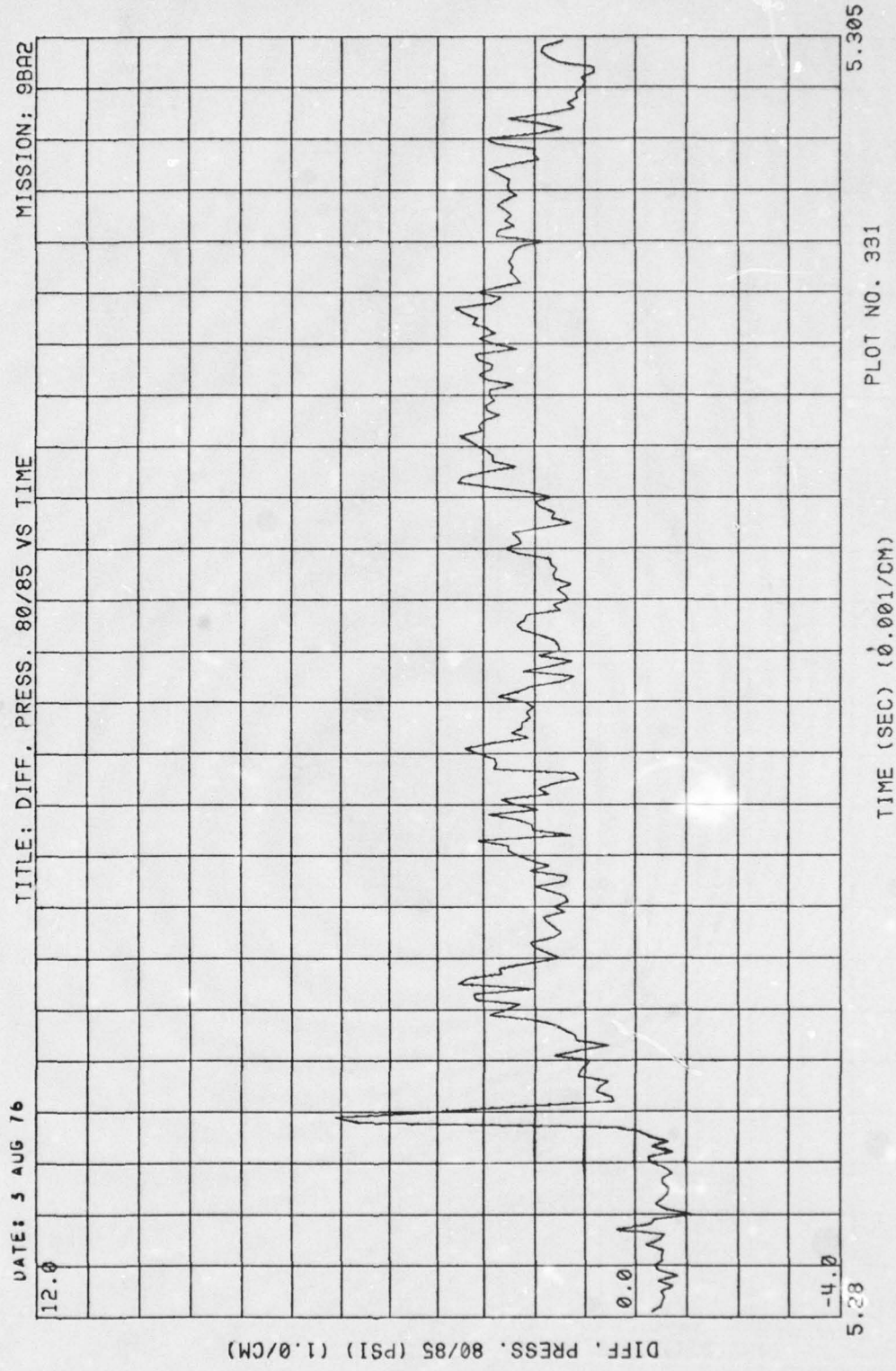


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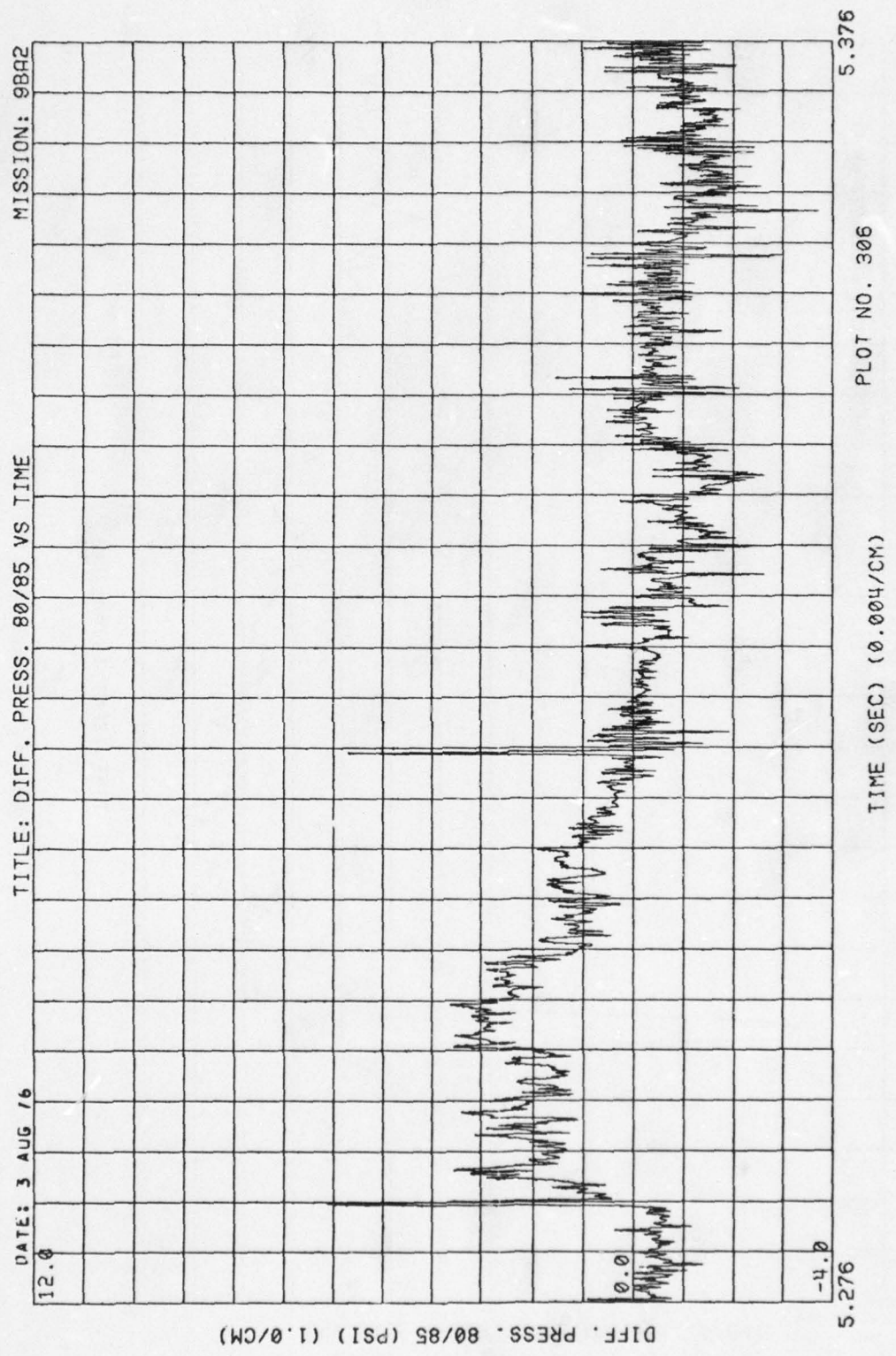


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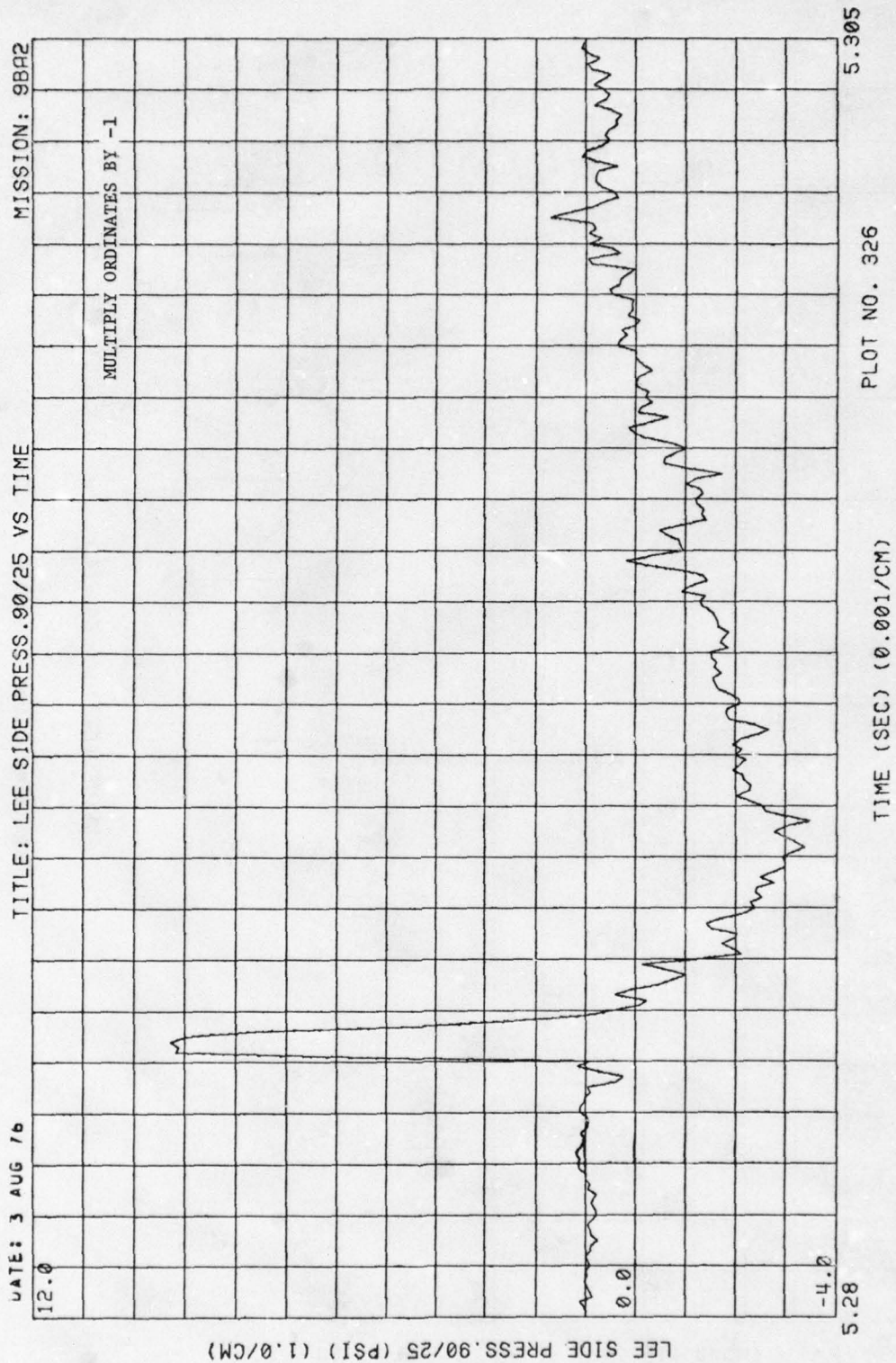


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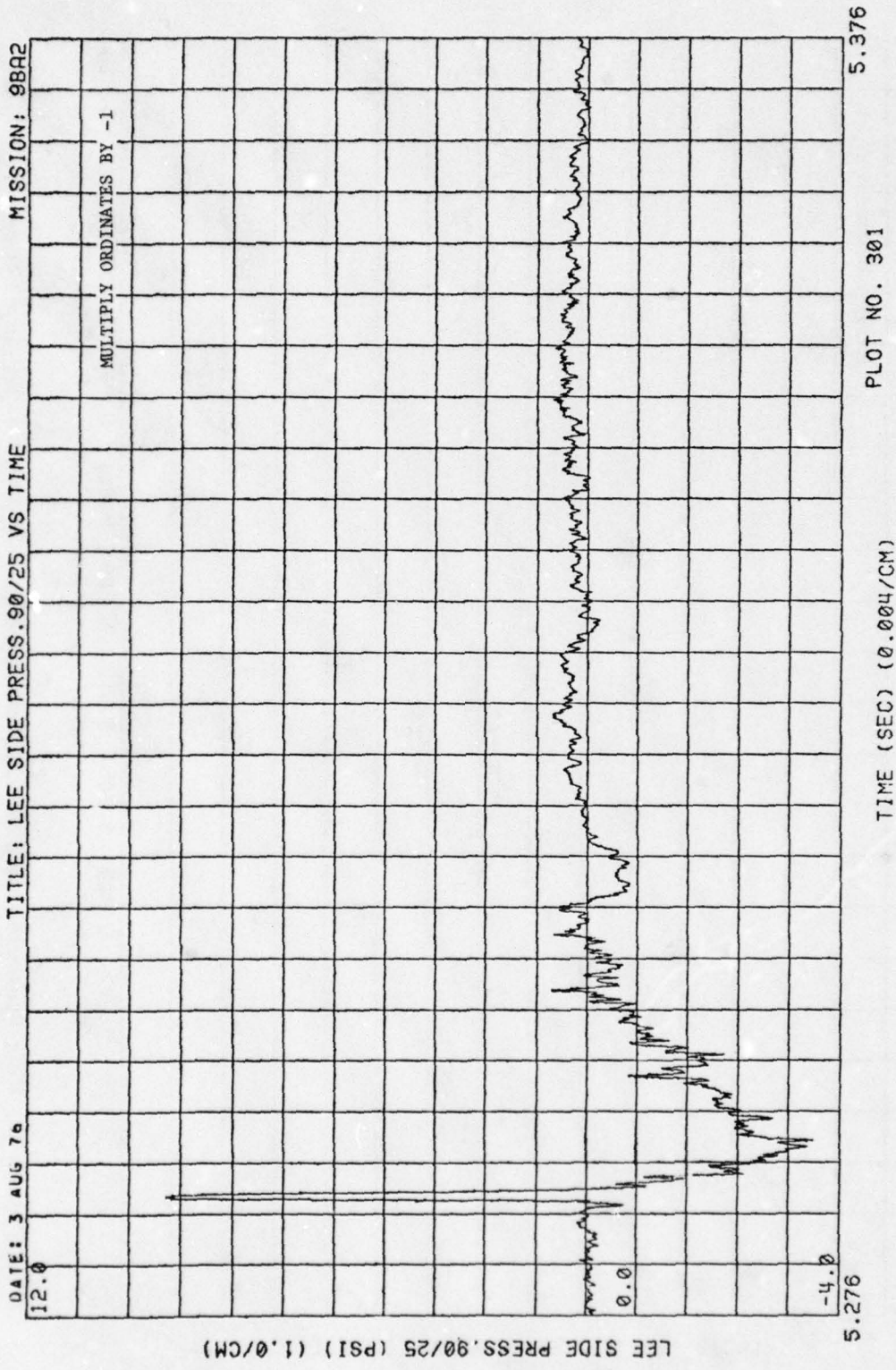


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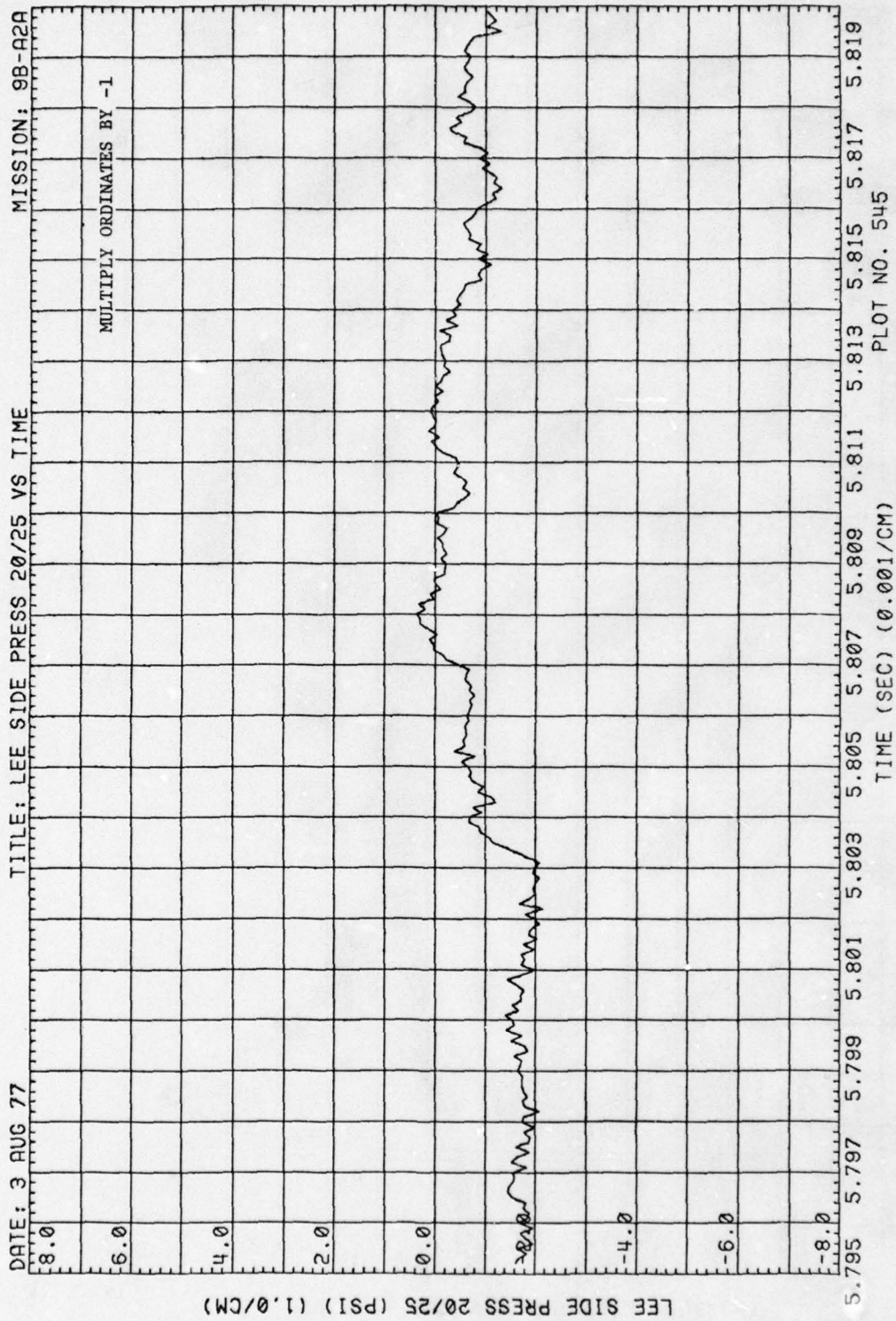


Figure 5. Wing Pressures, Run 9B-A2, Intercept 3, $\phi = 134.9$ deg., $\Delta p_s = 2.0$ psi.

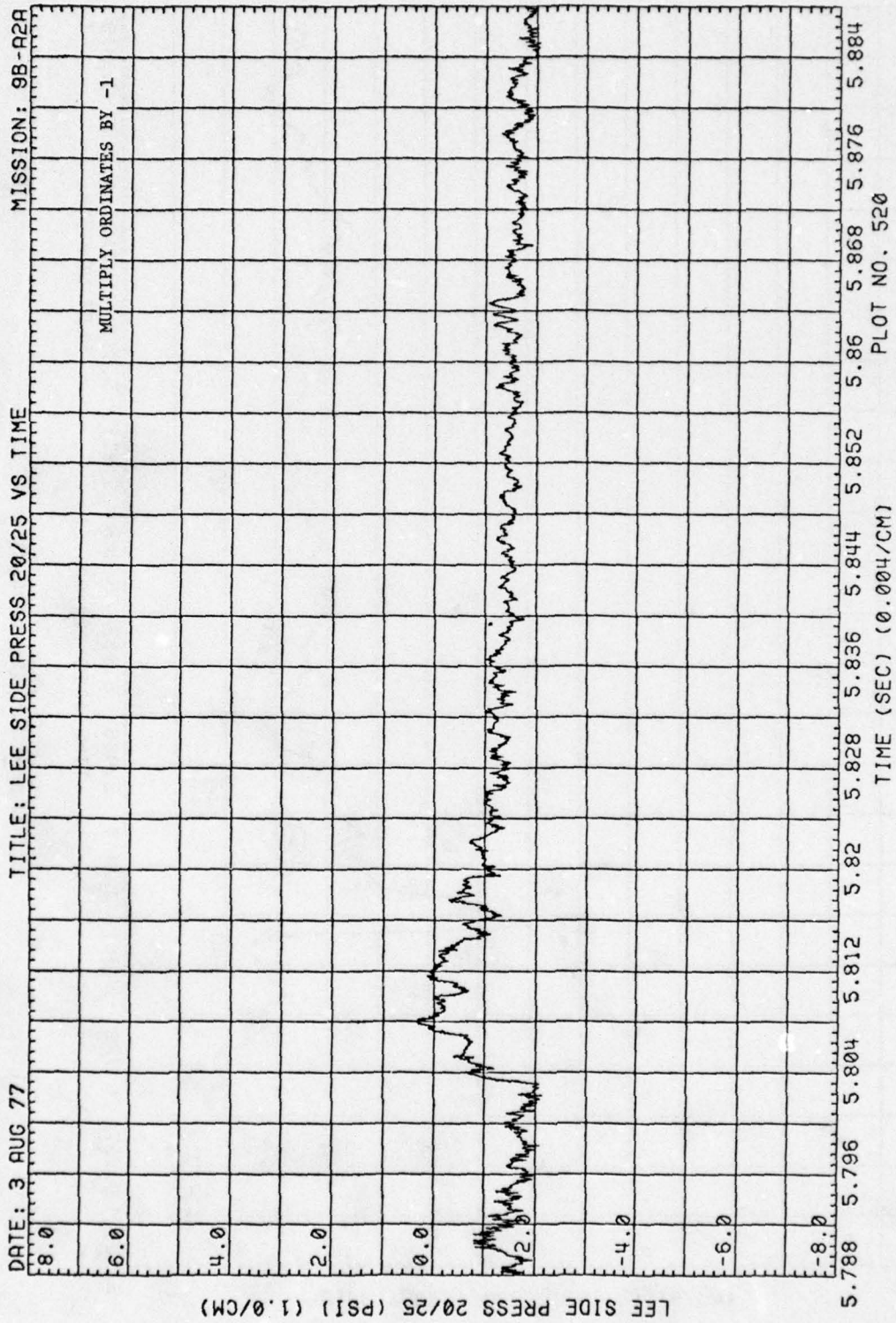


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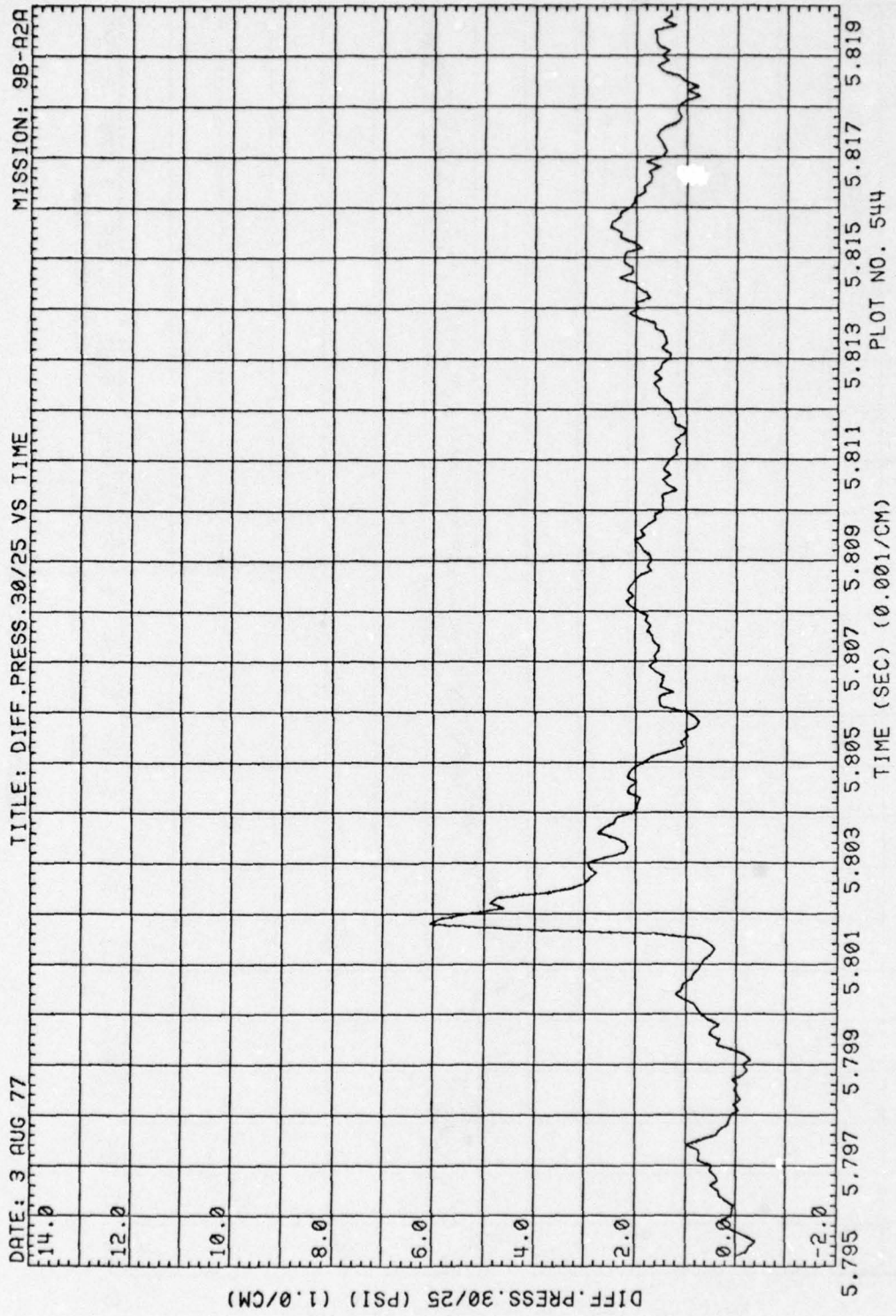


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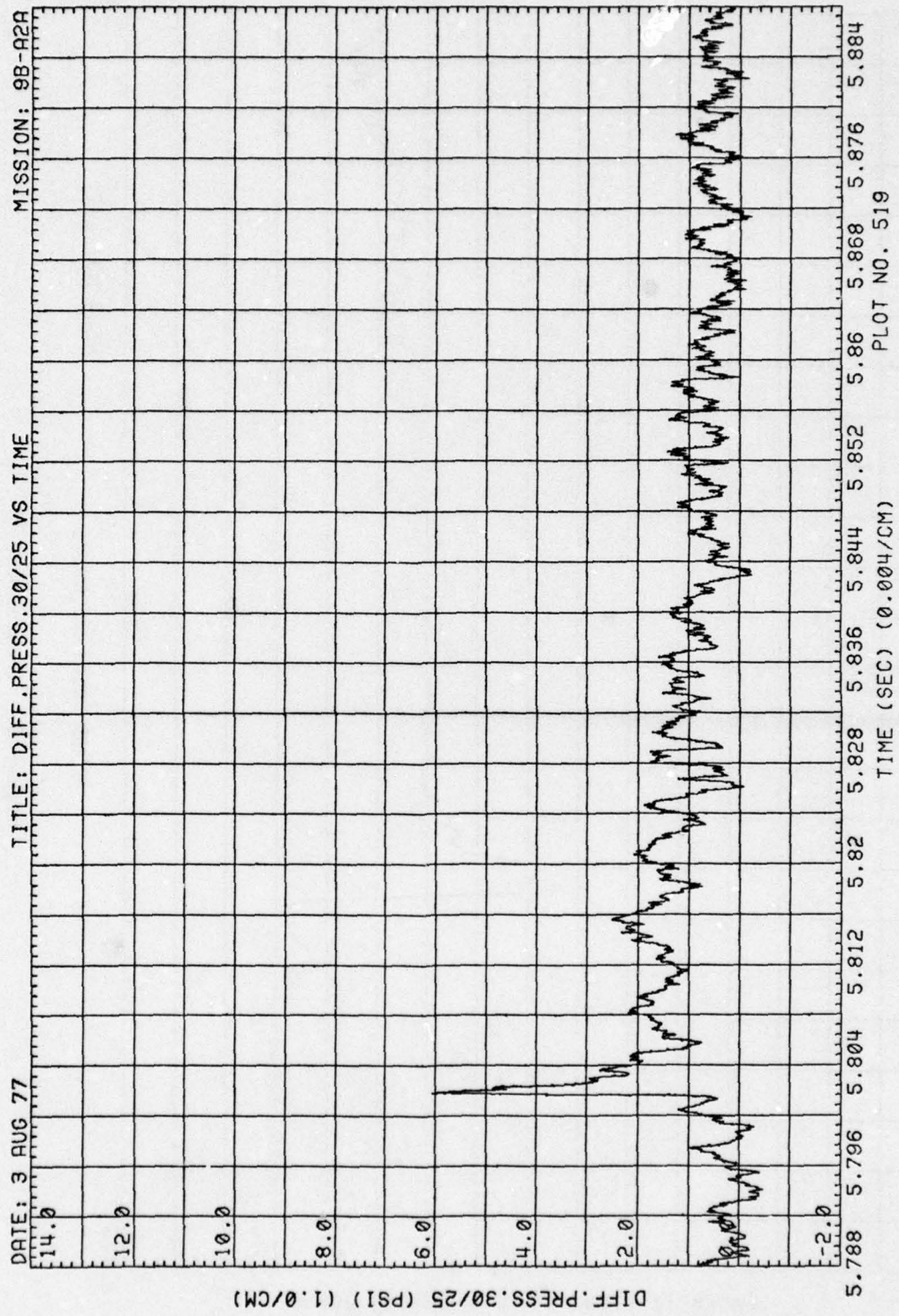


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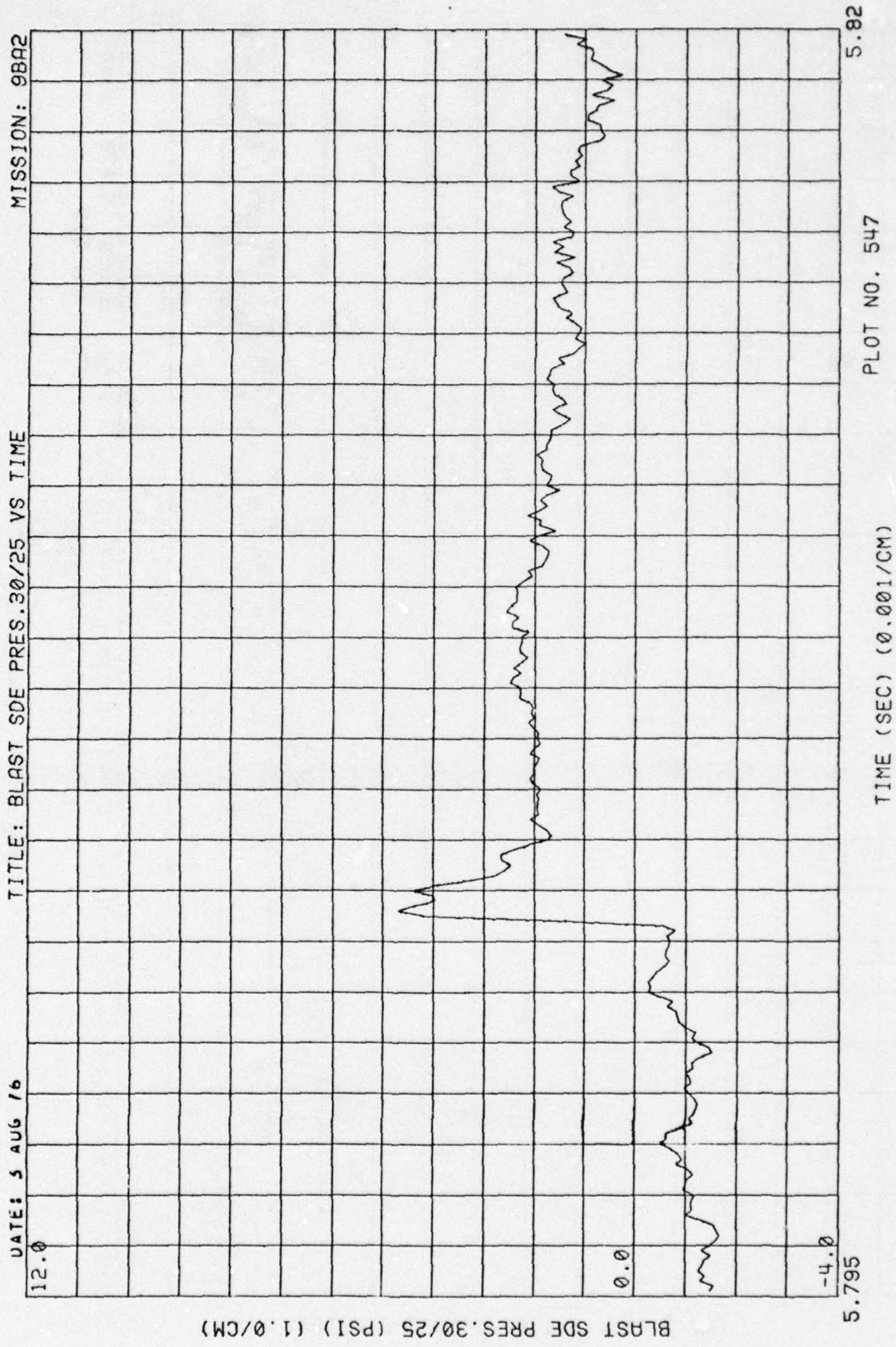


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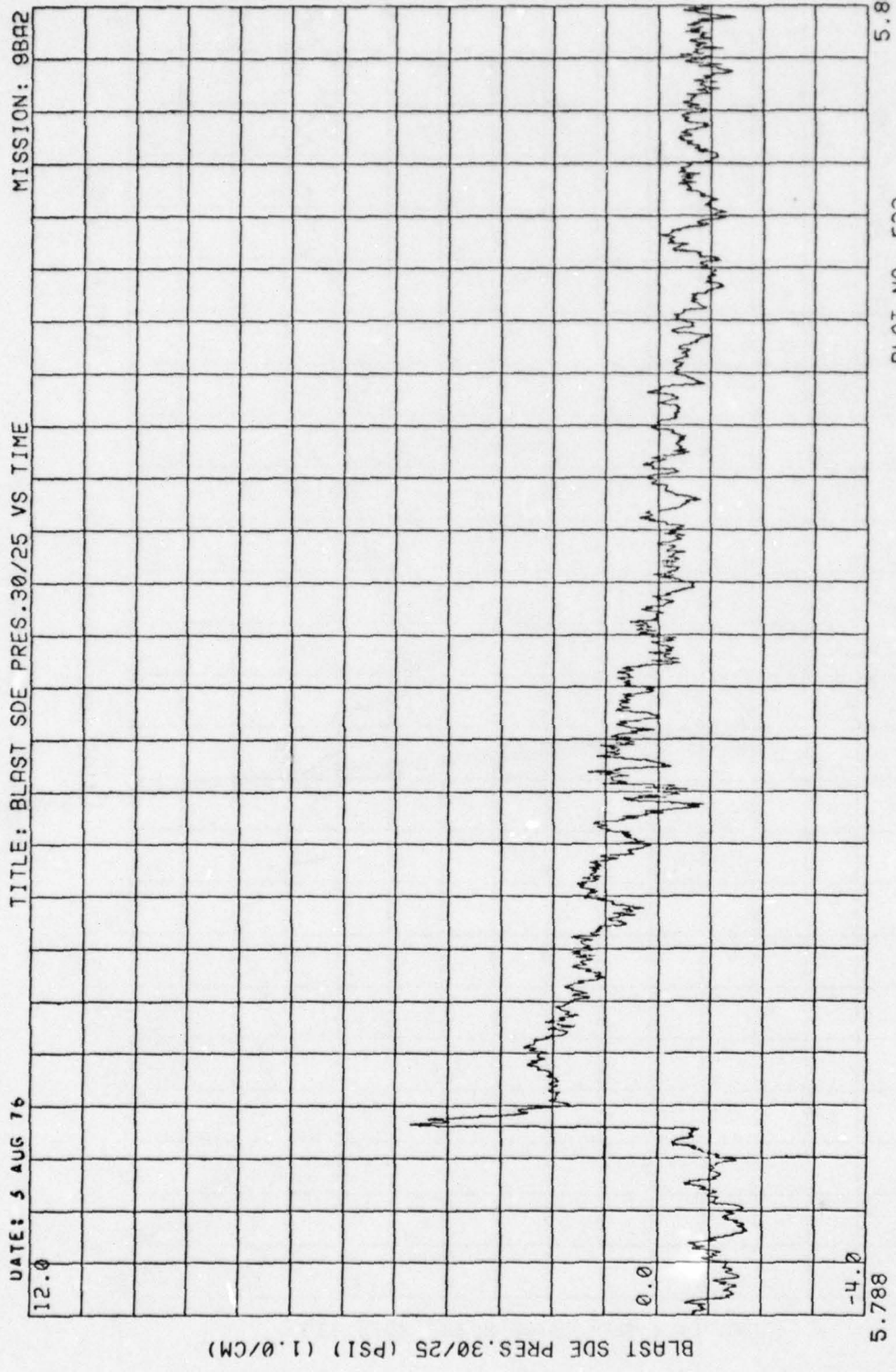


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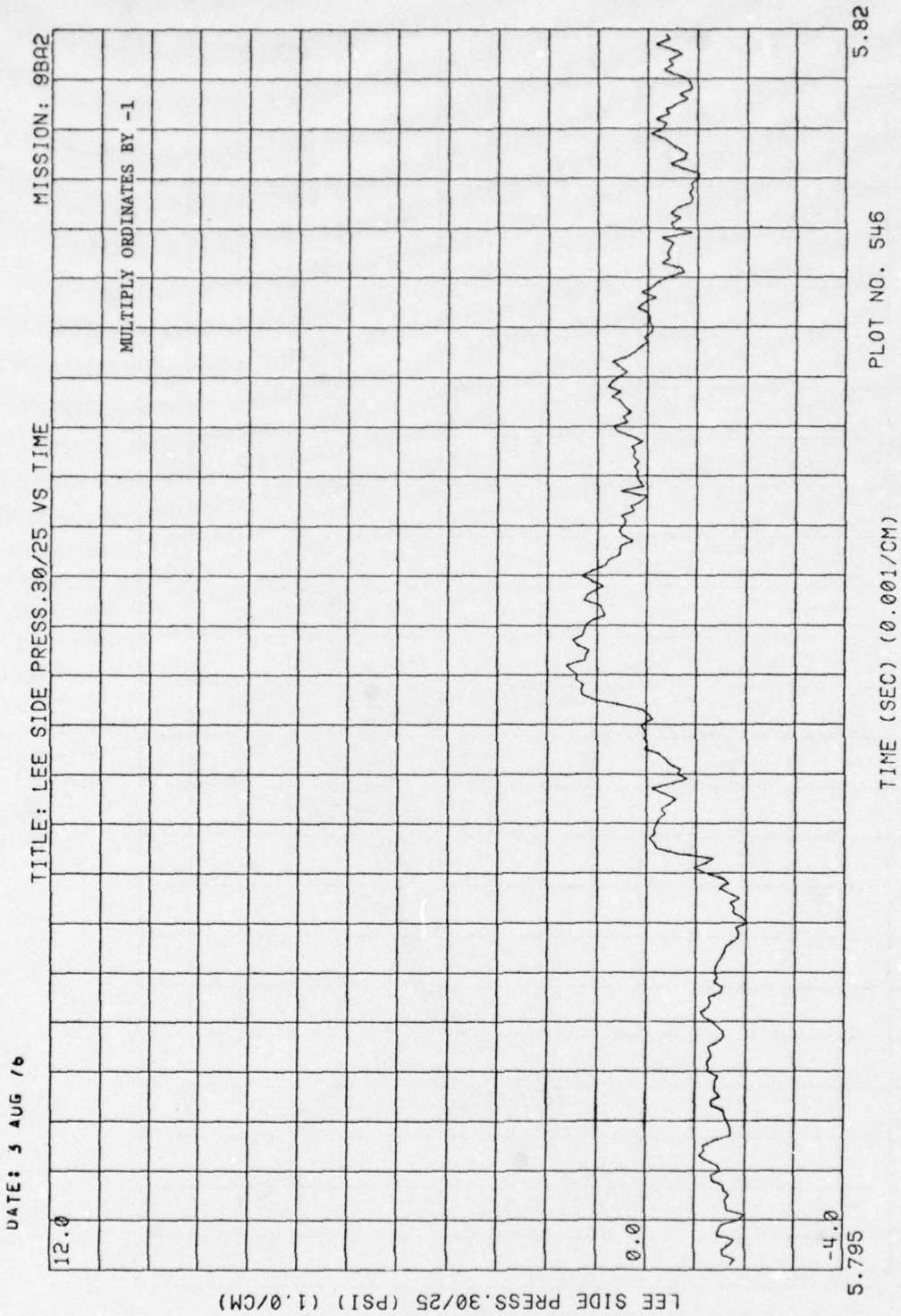


Figure 5. (Continued)

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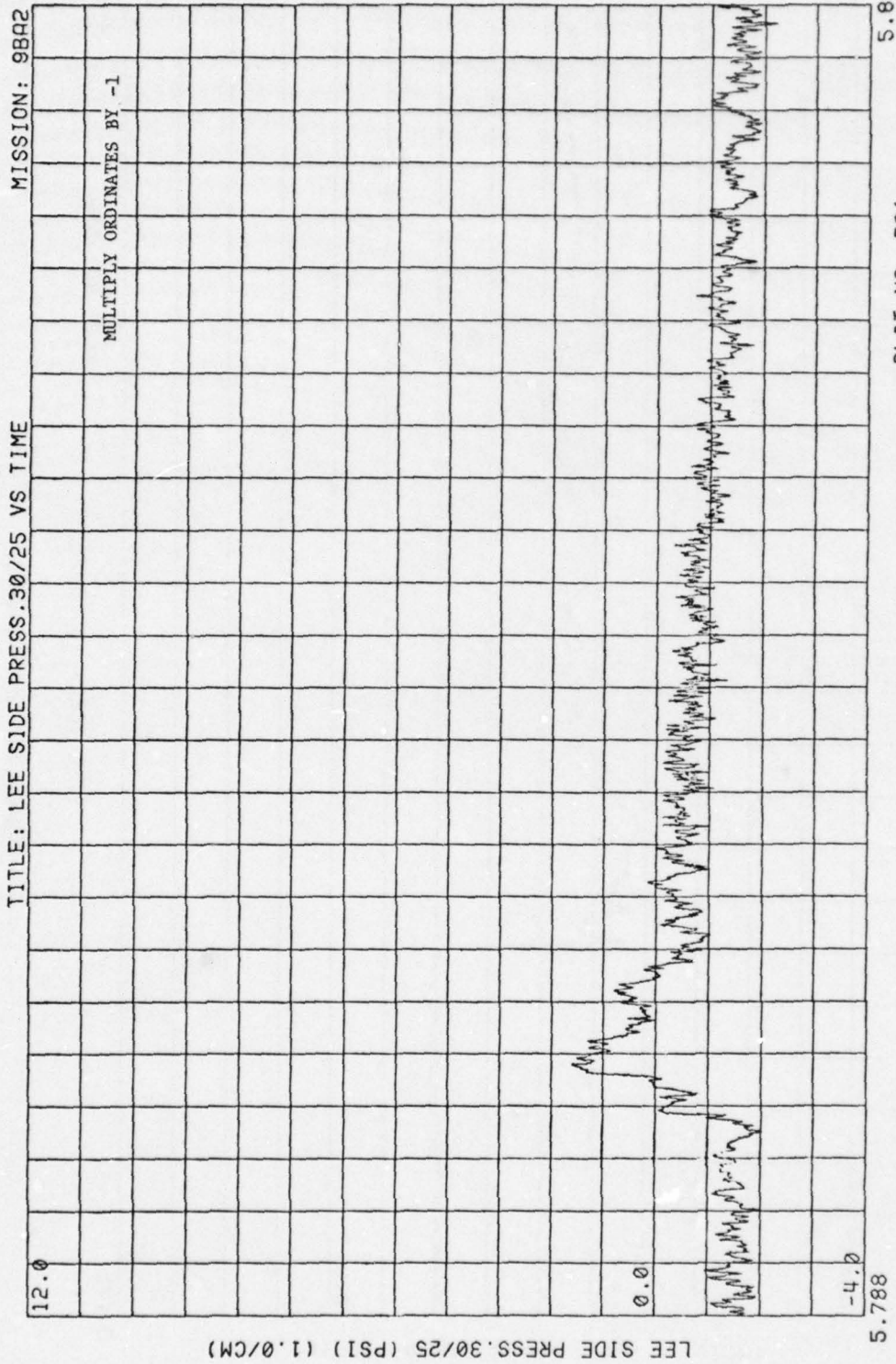


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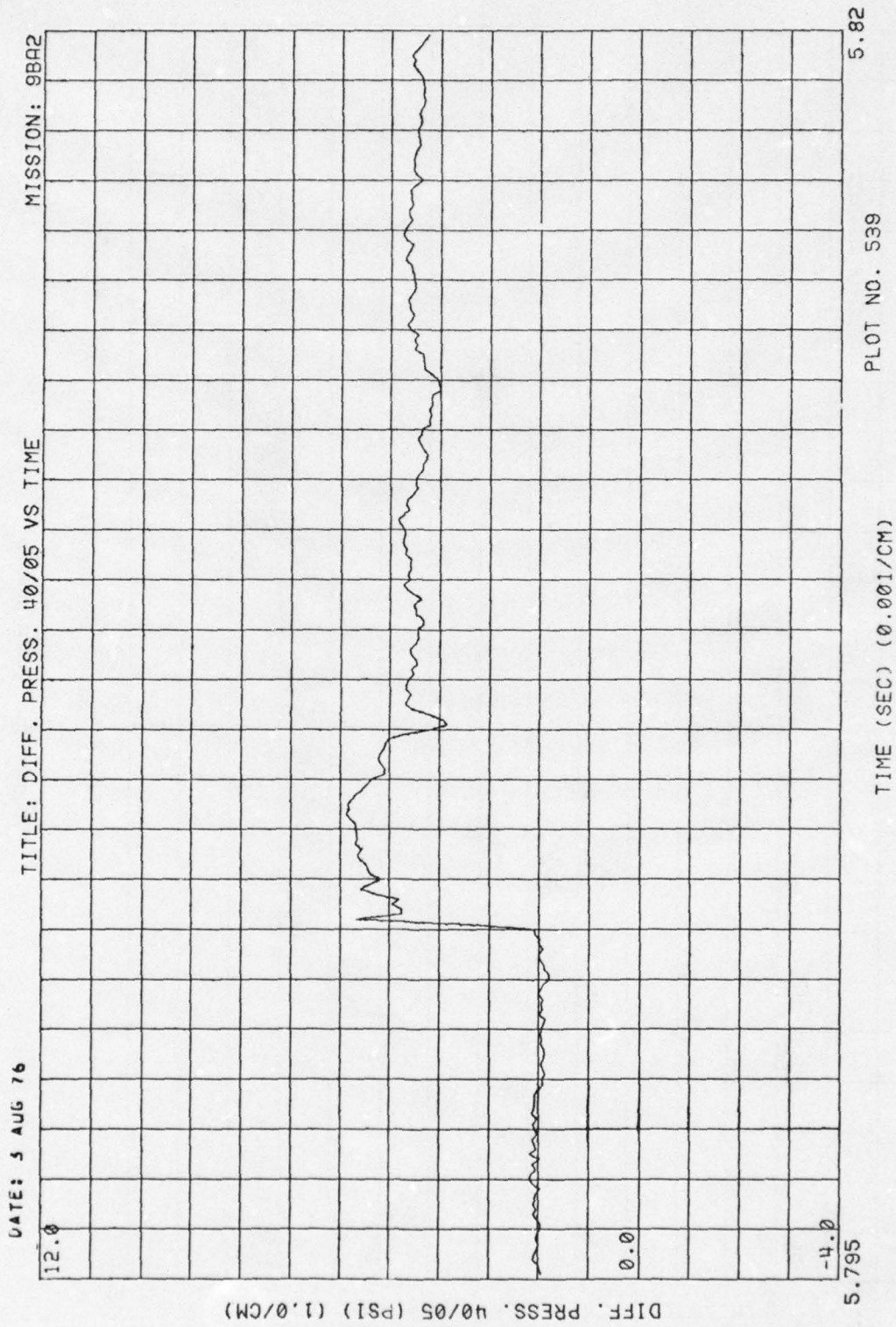


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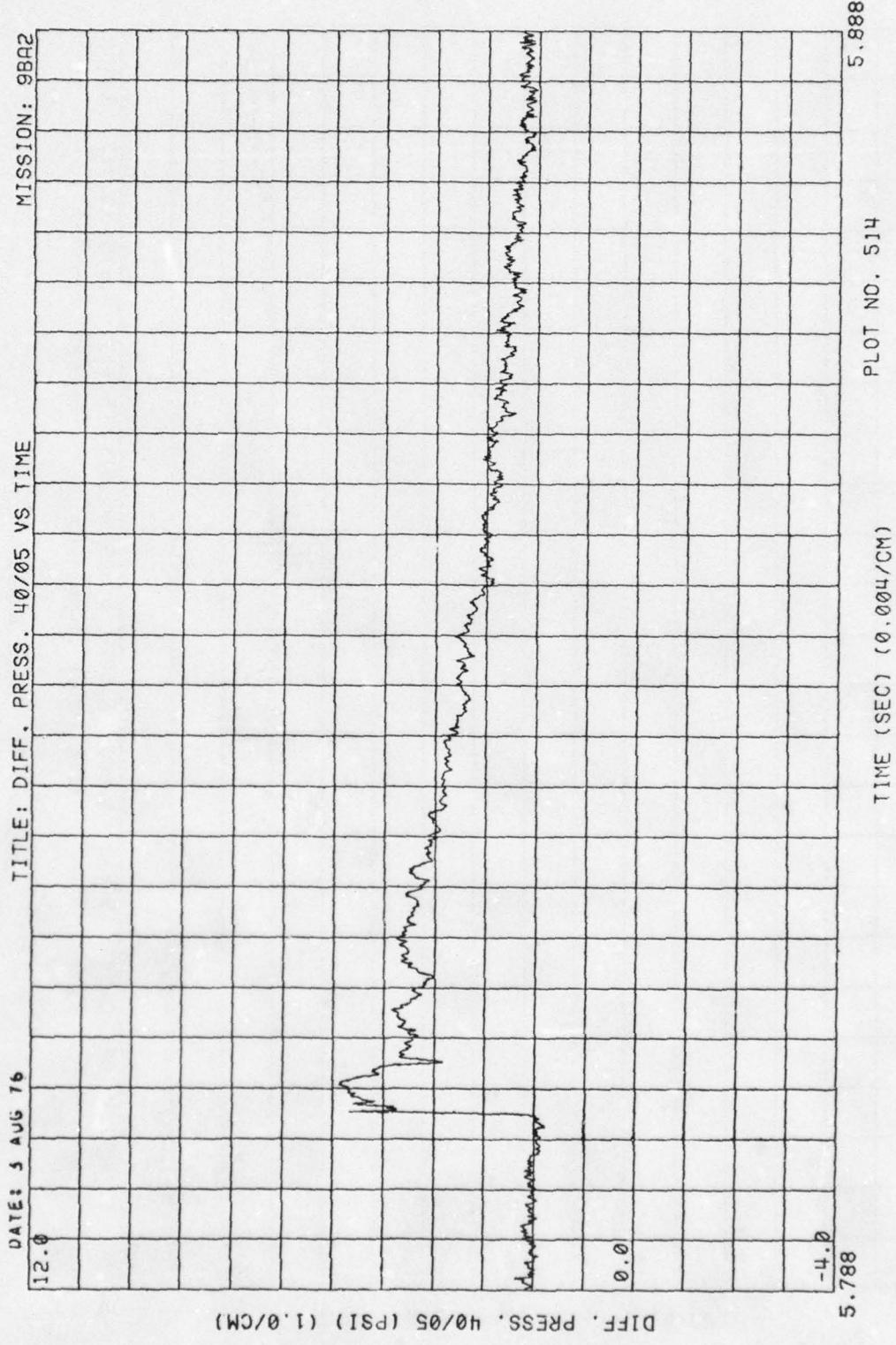


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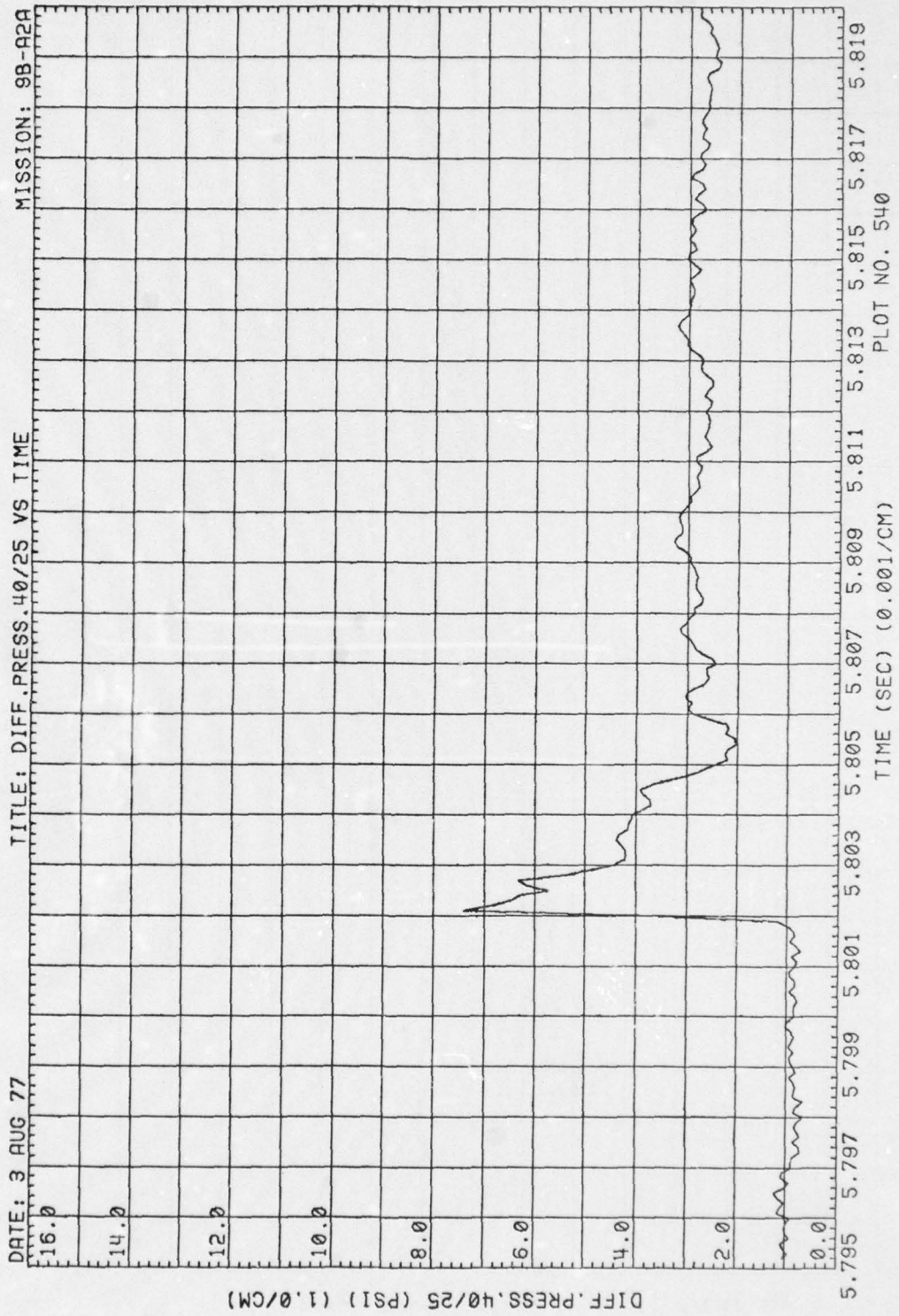


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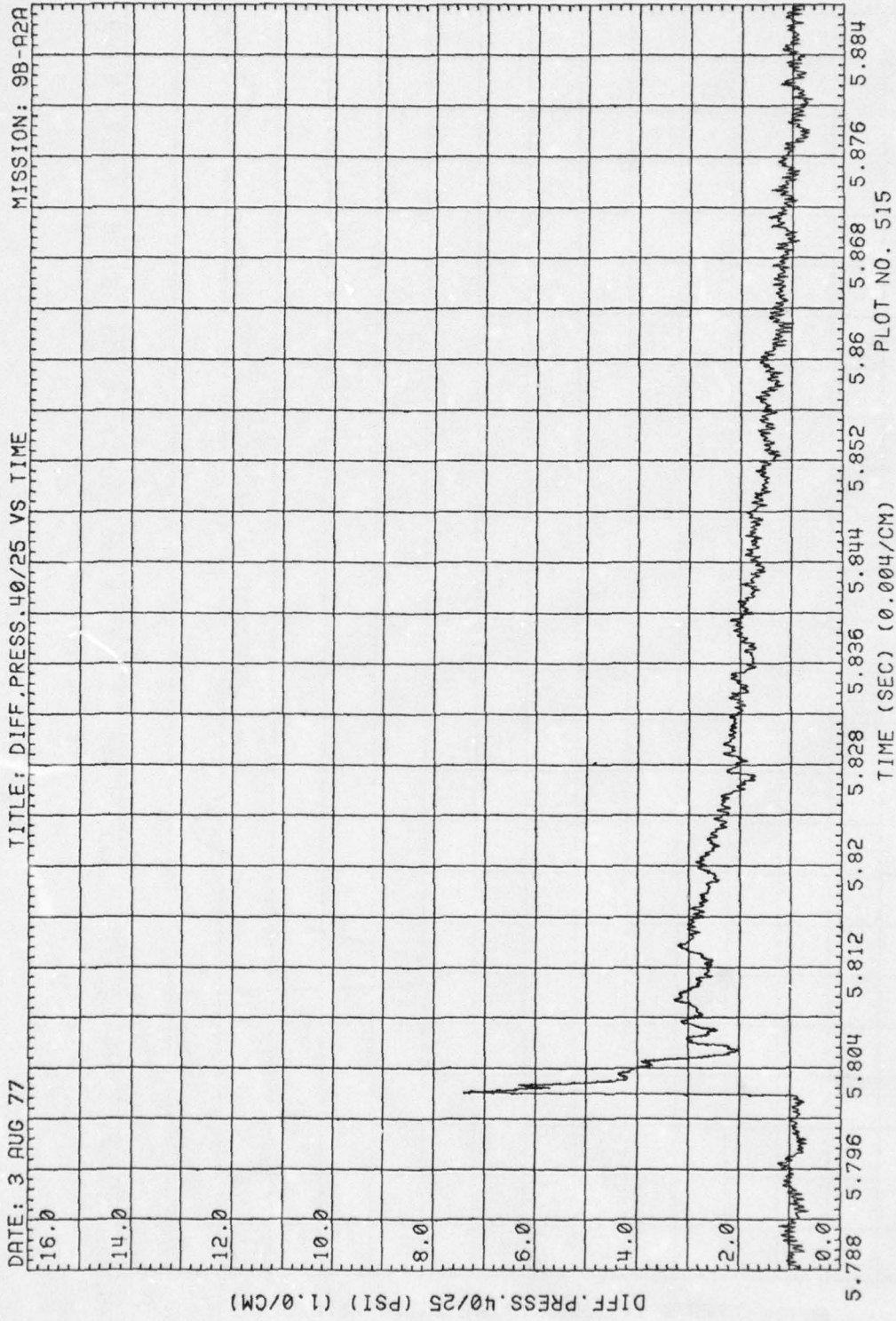


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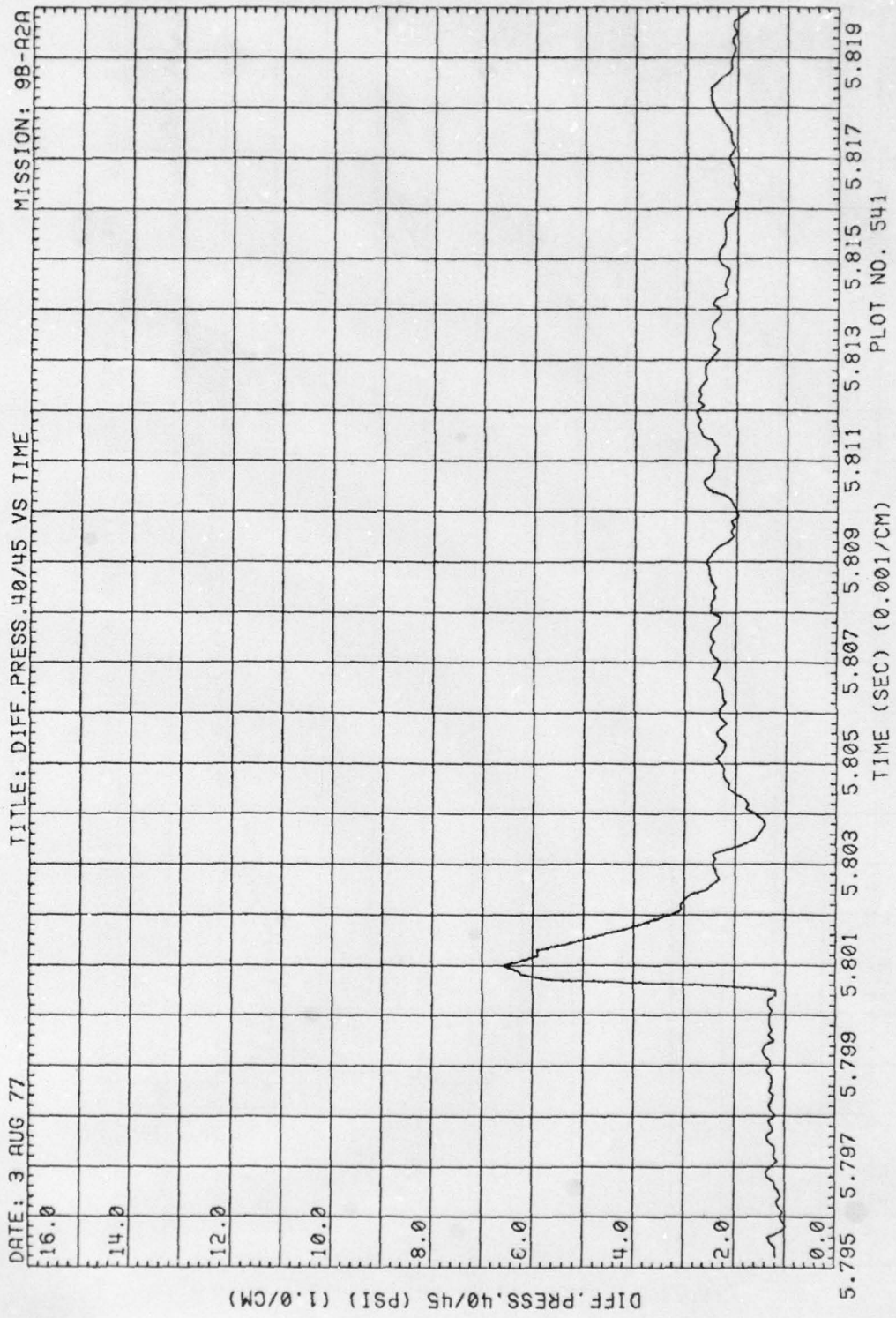


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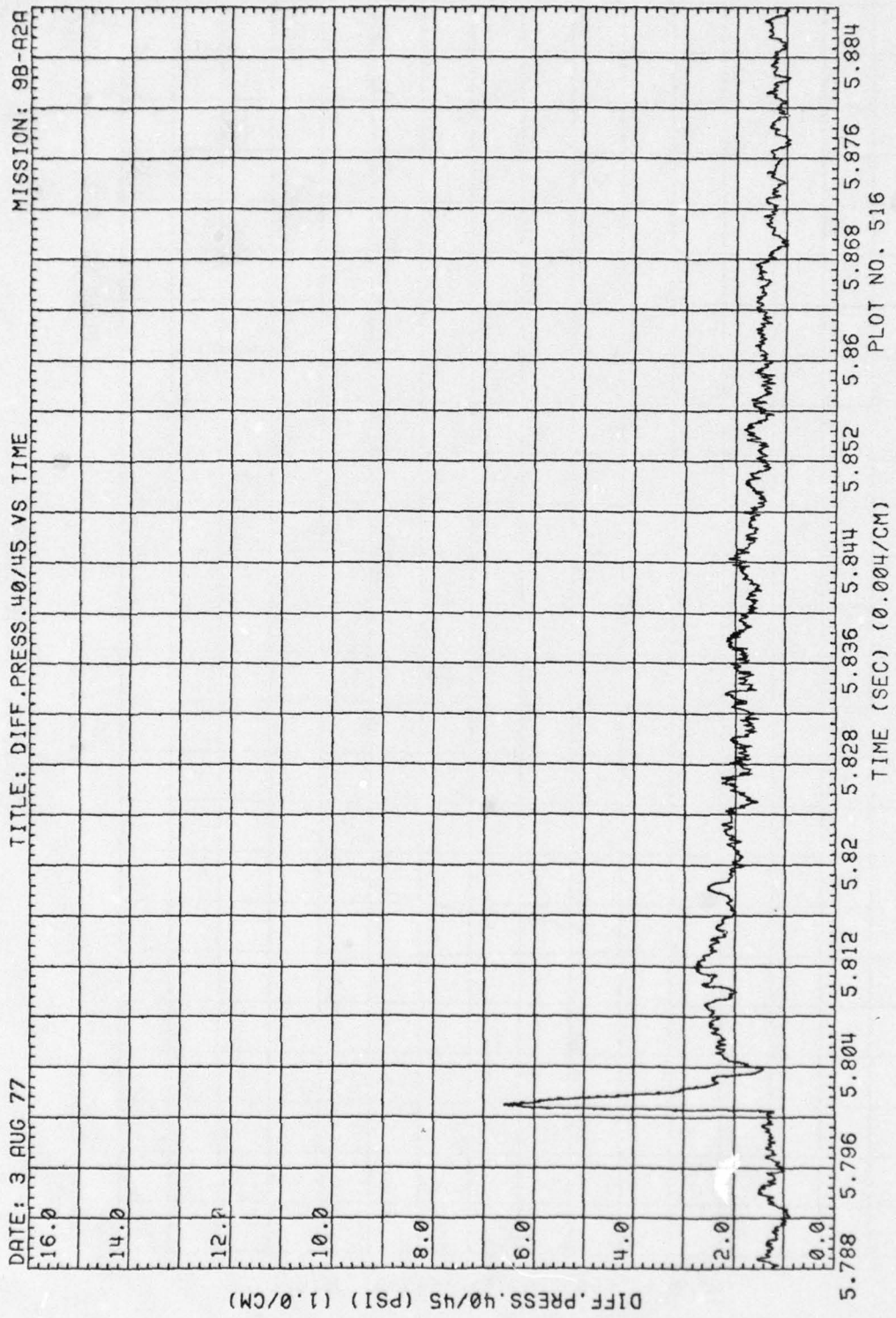


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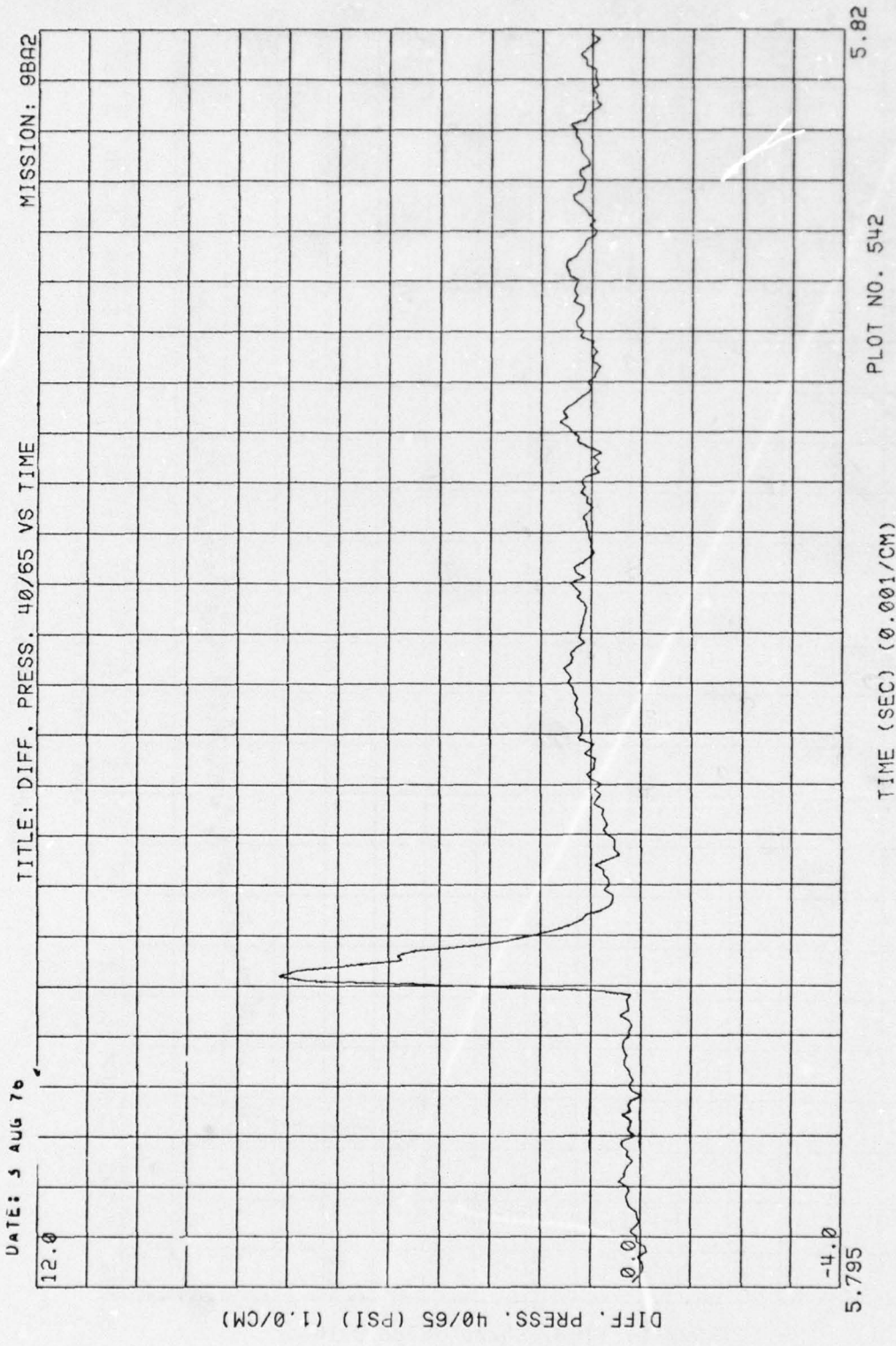


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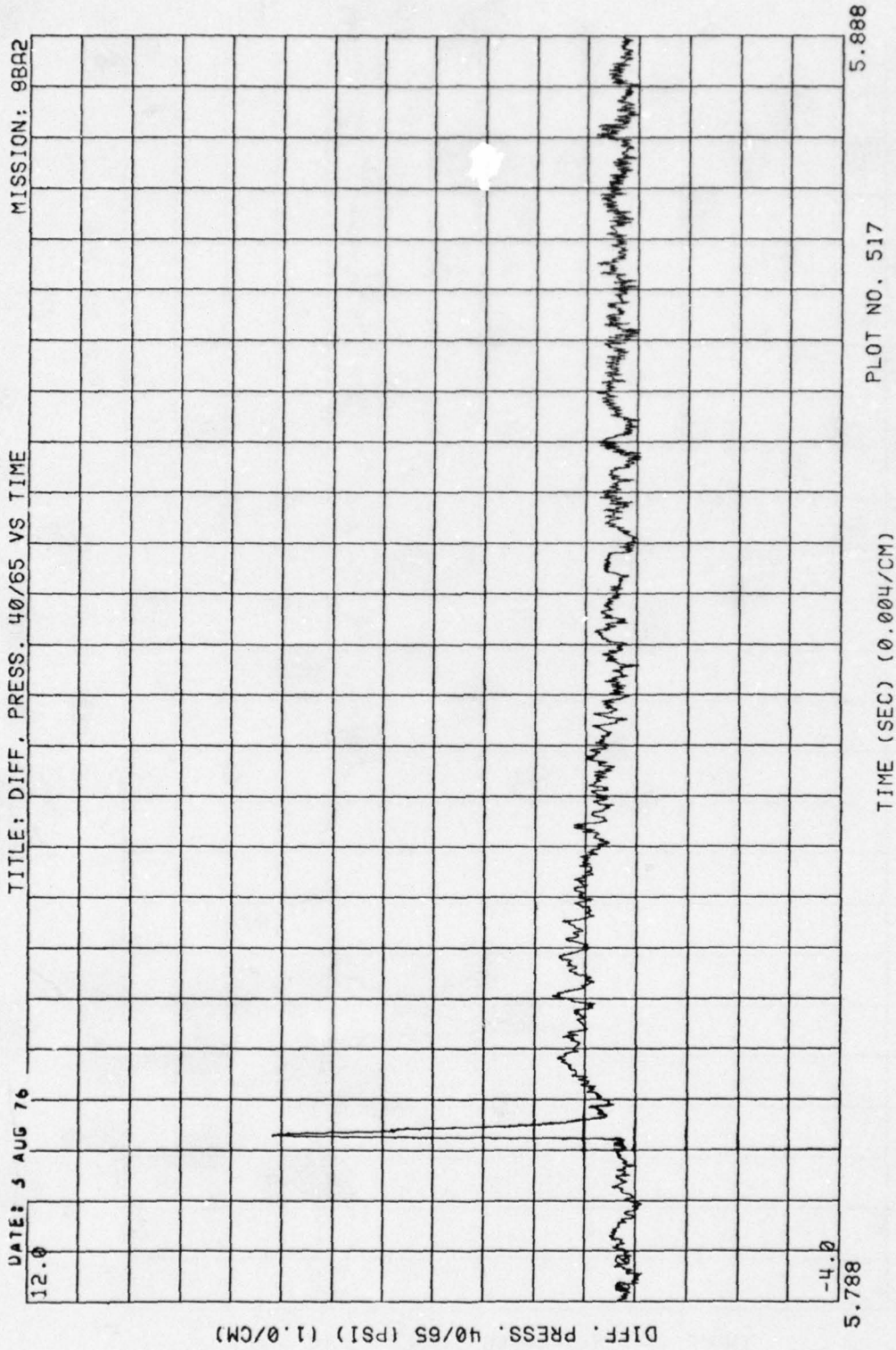


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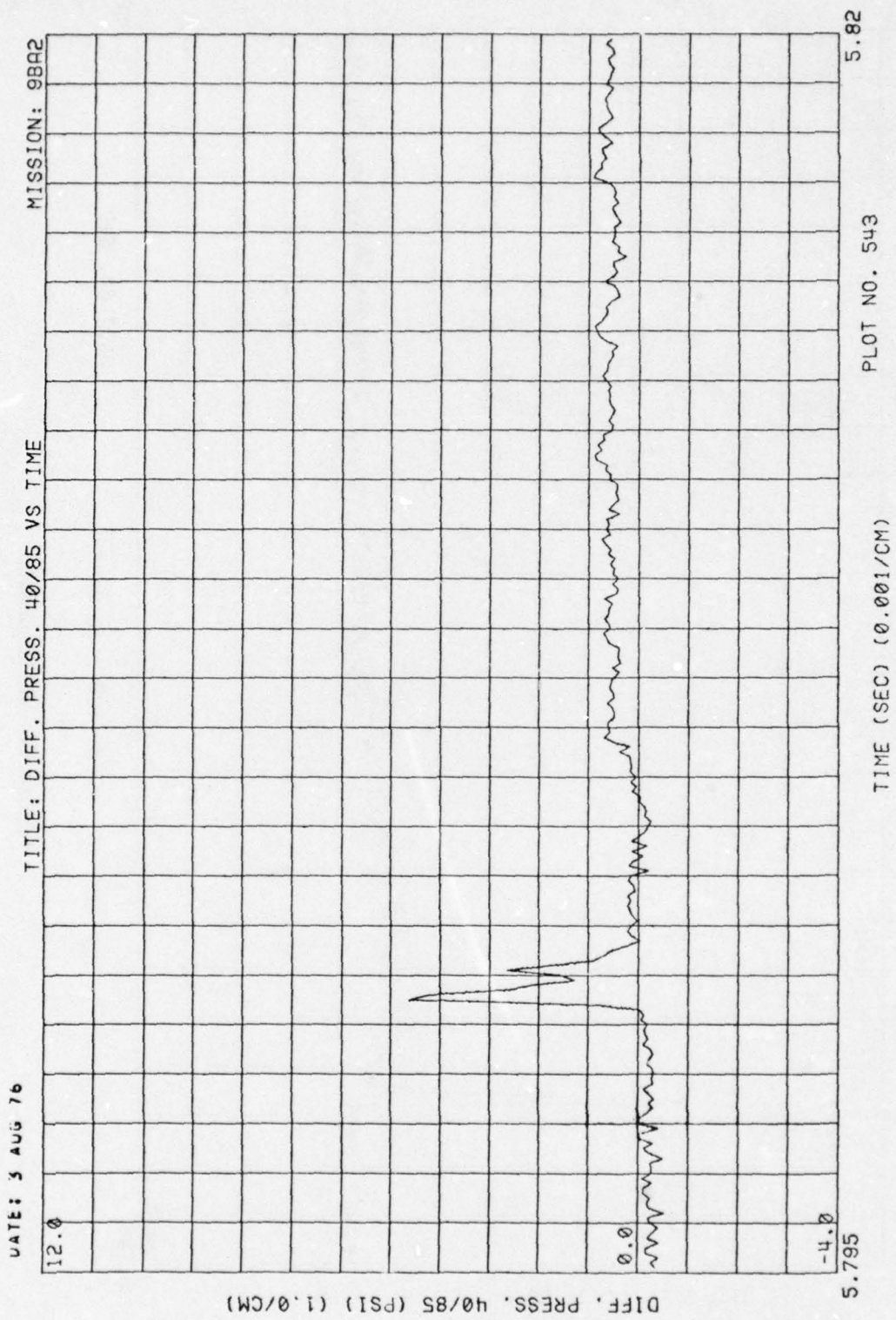


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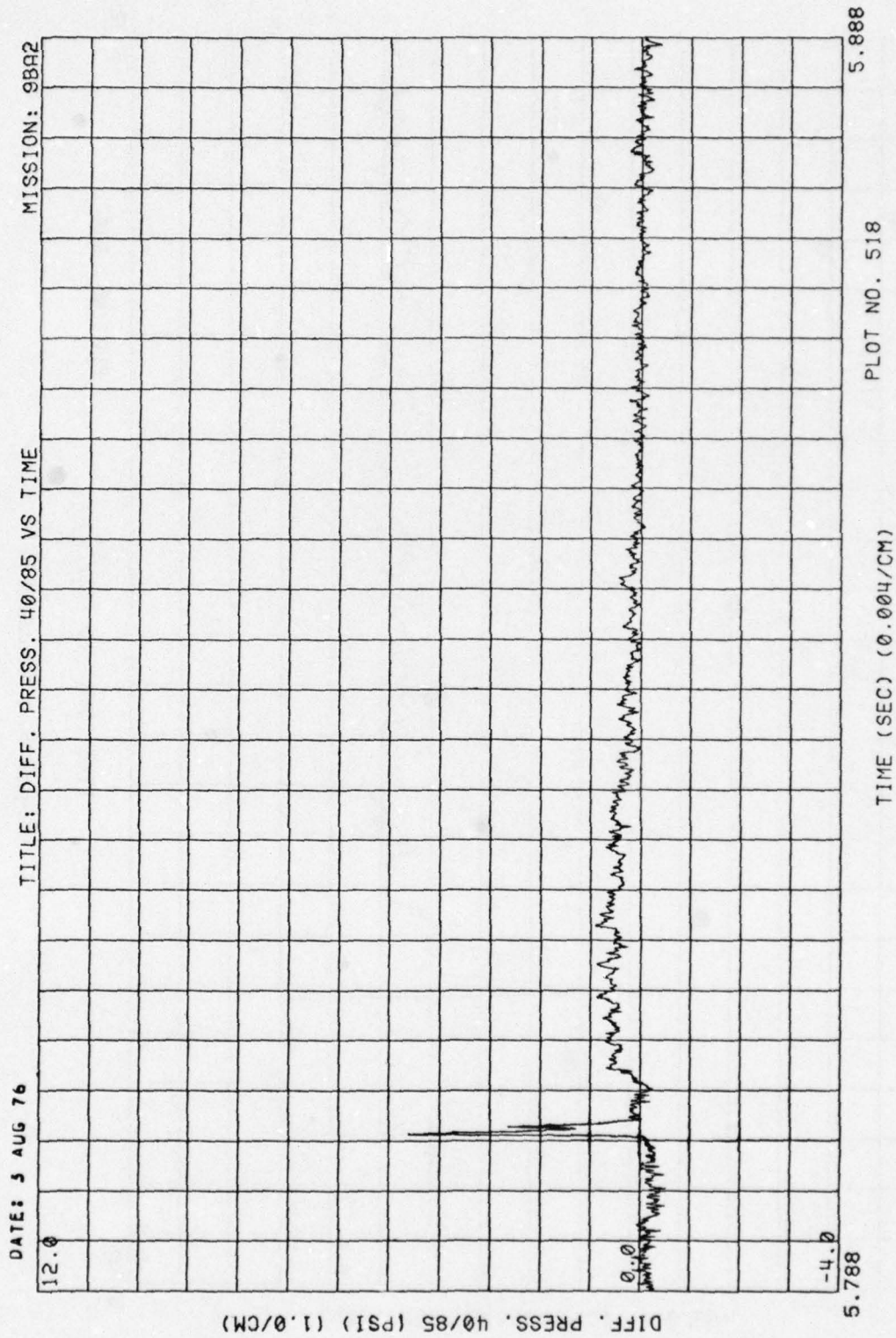


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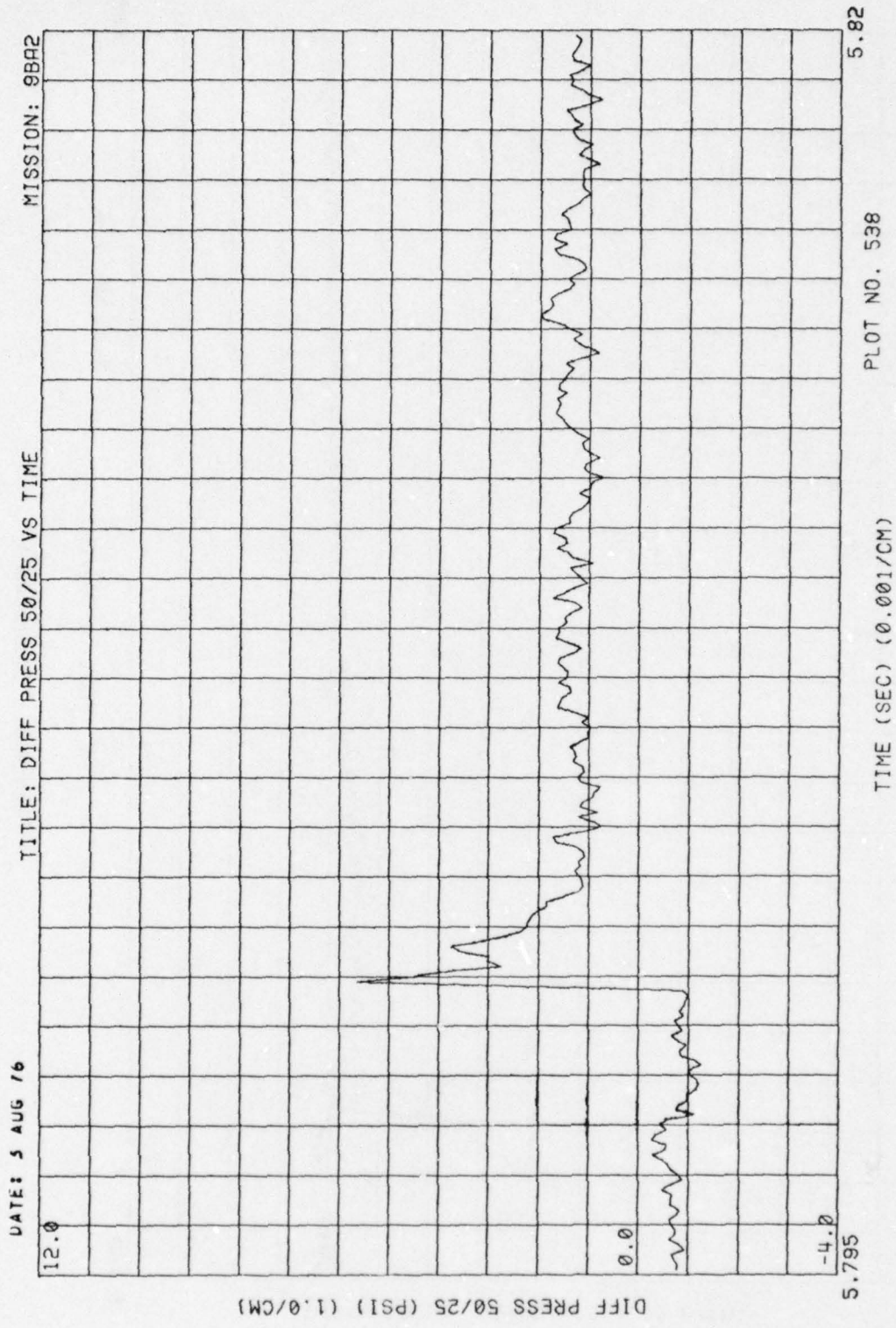


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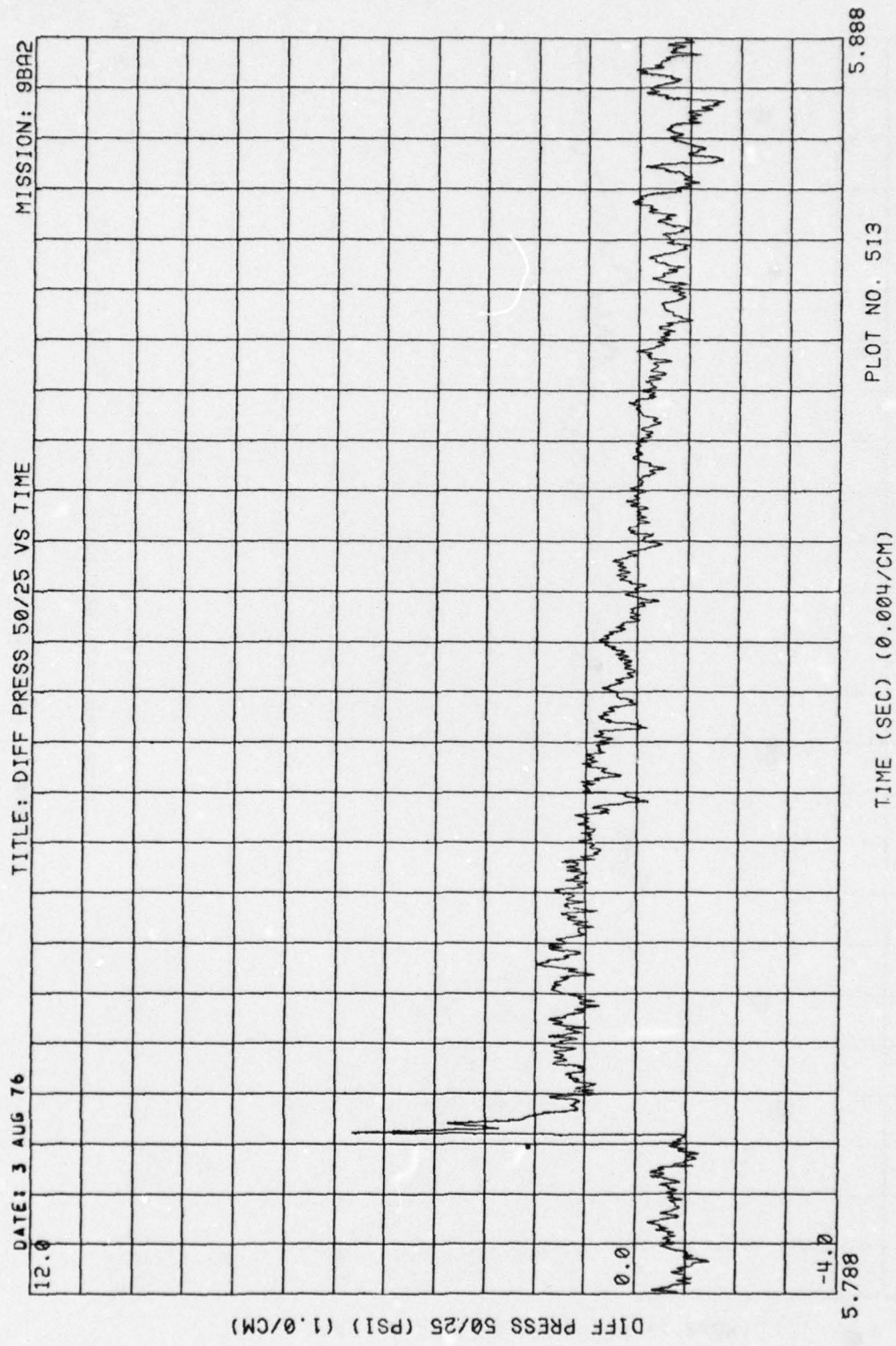


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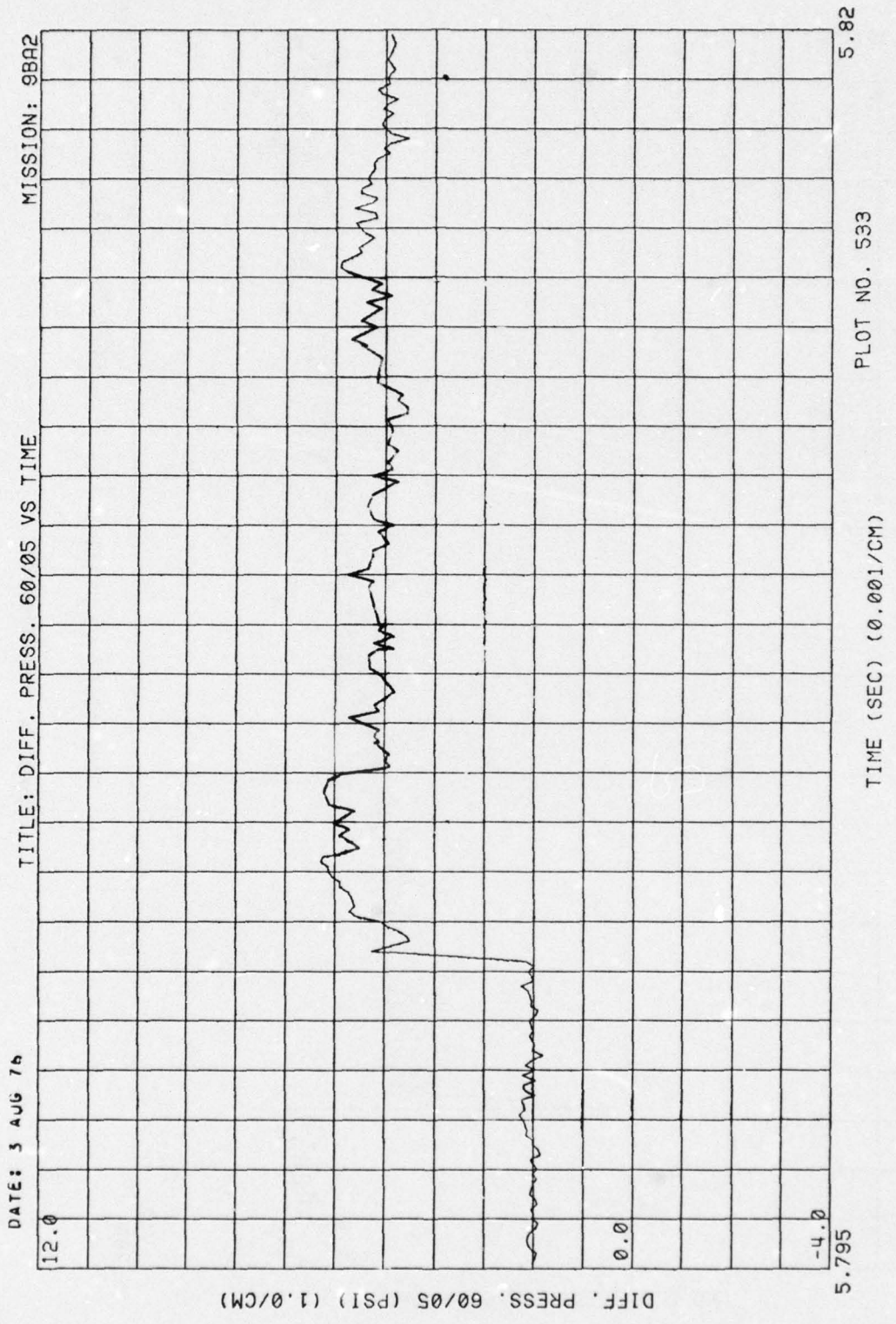


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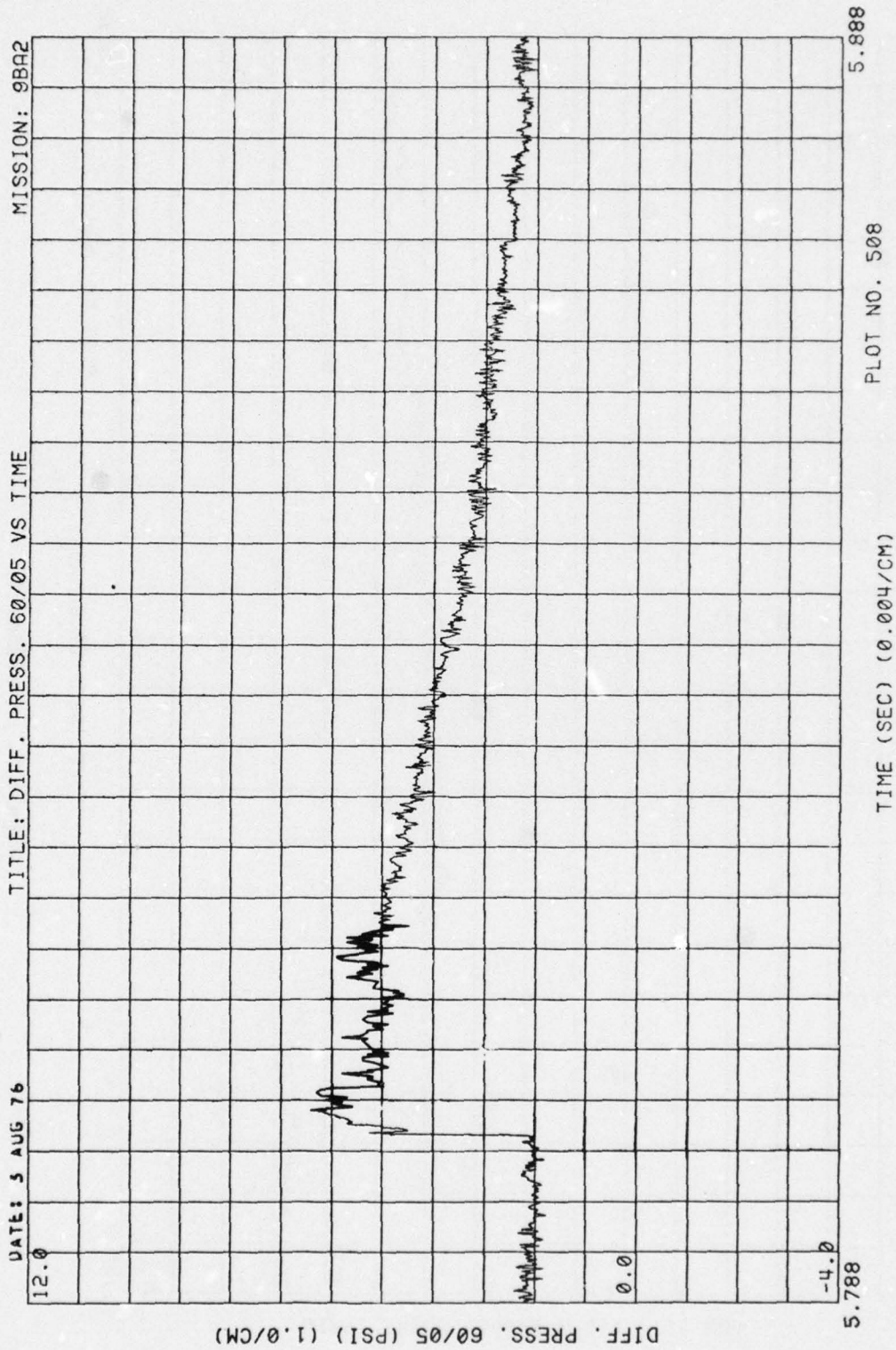


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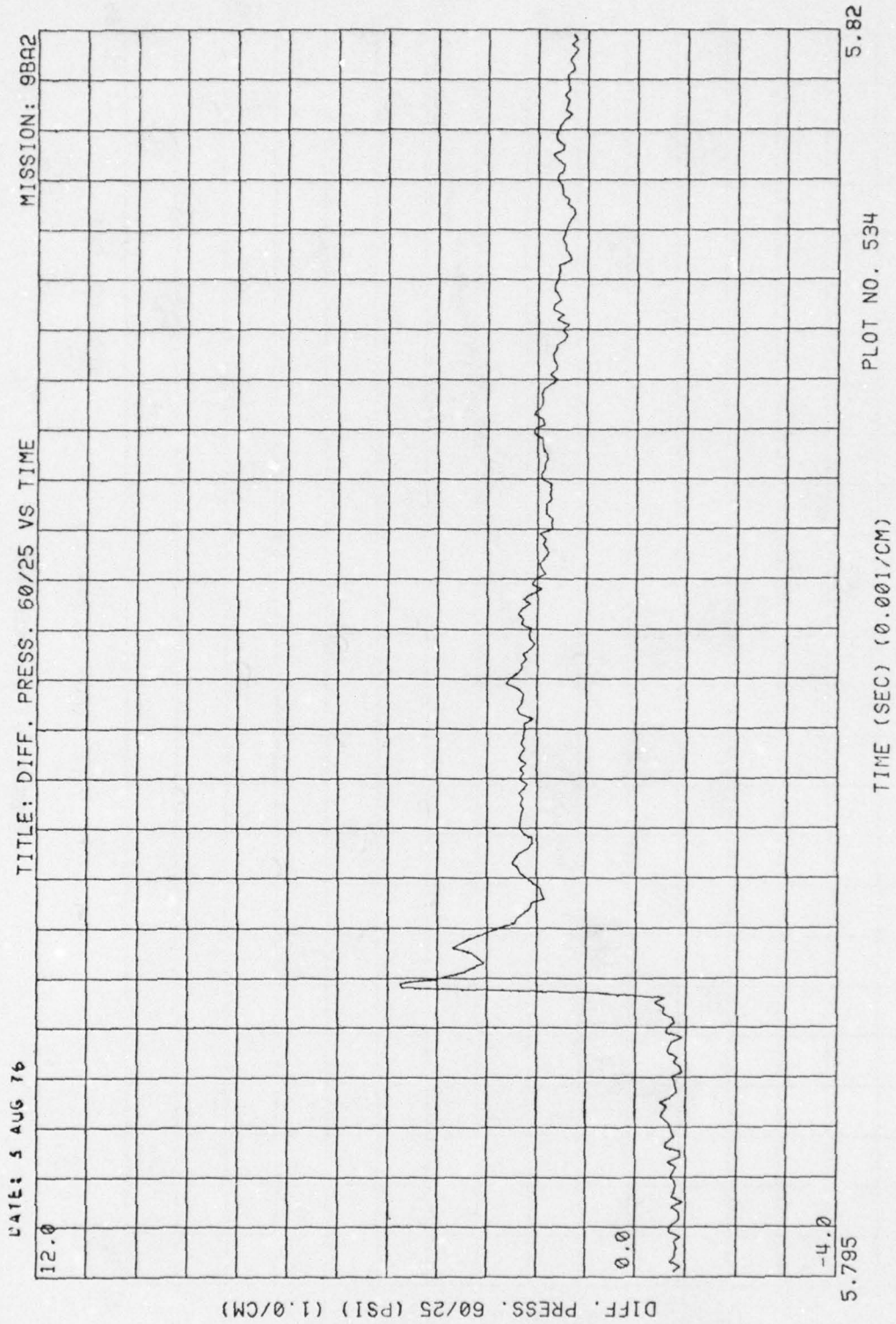


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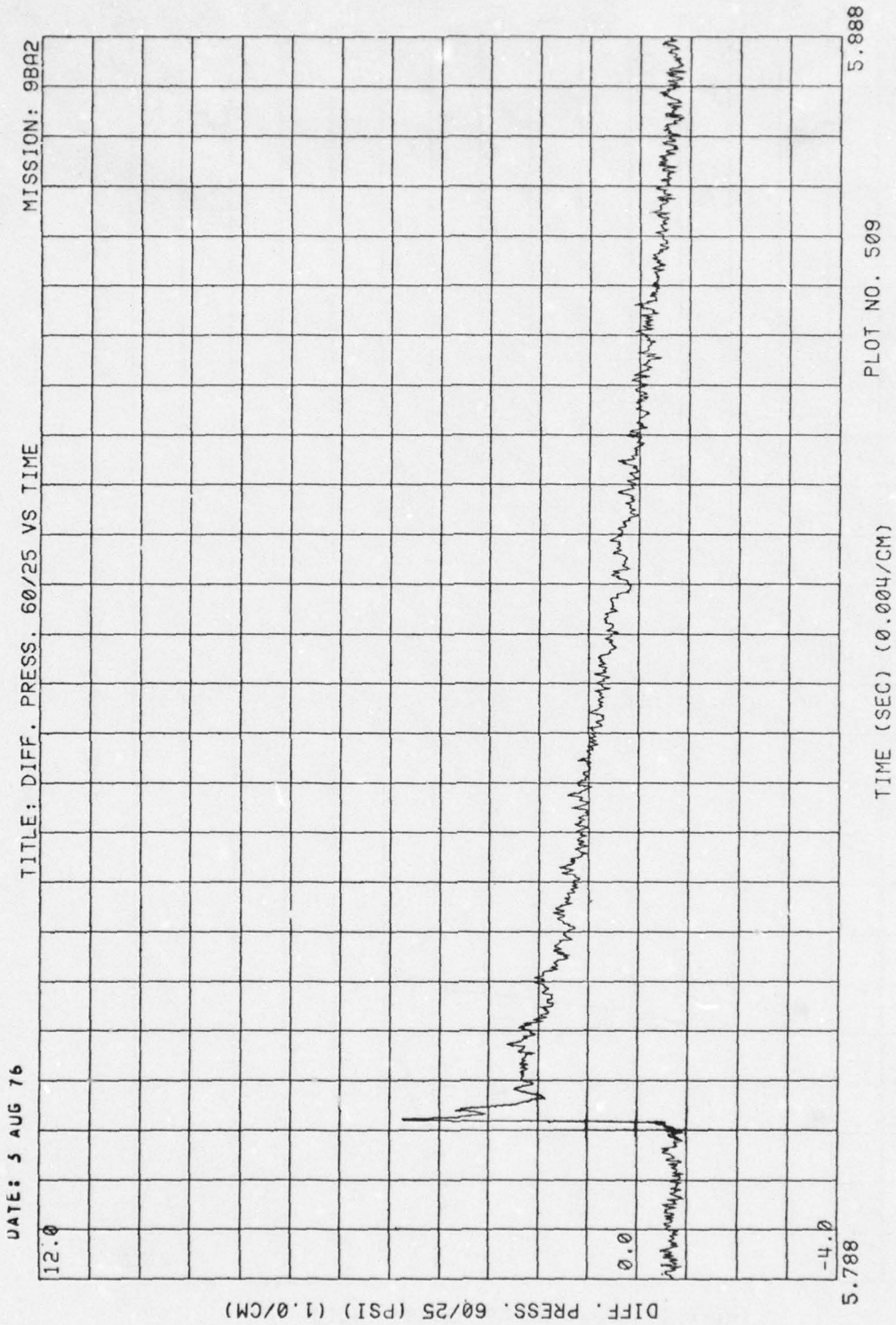


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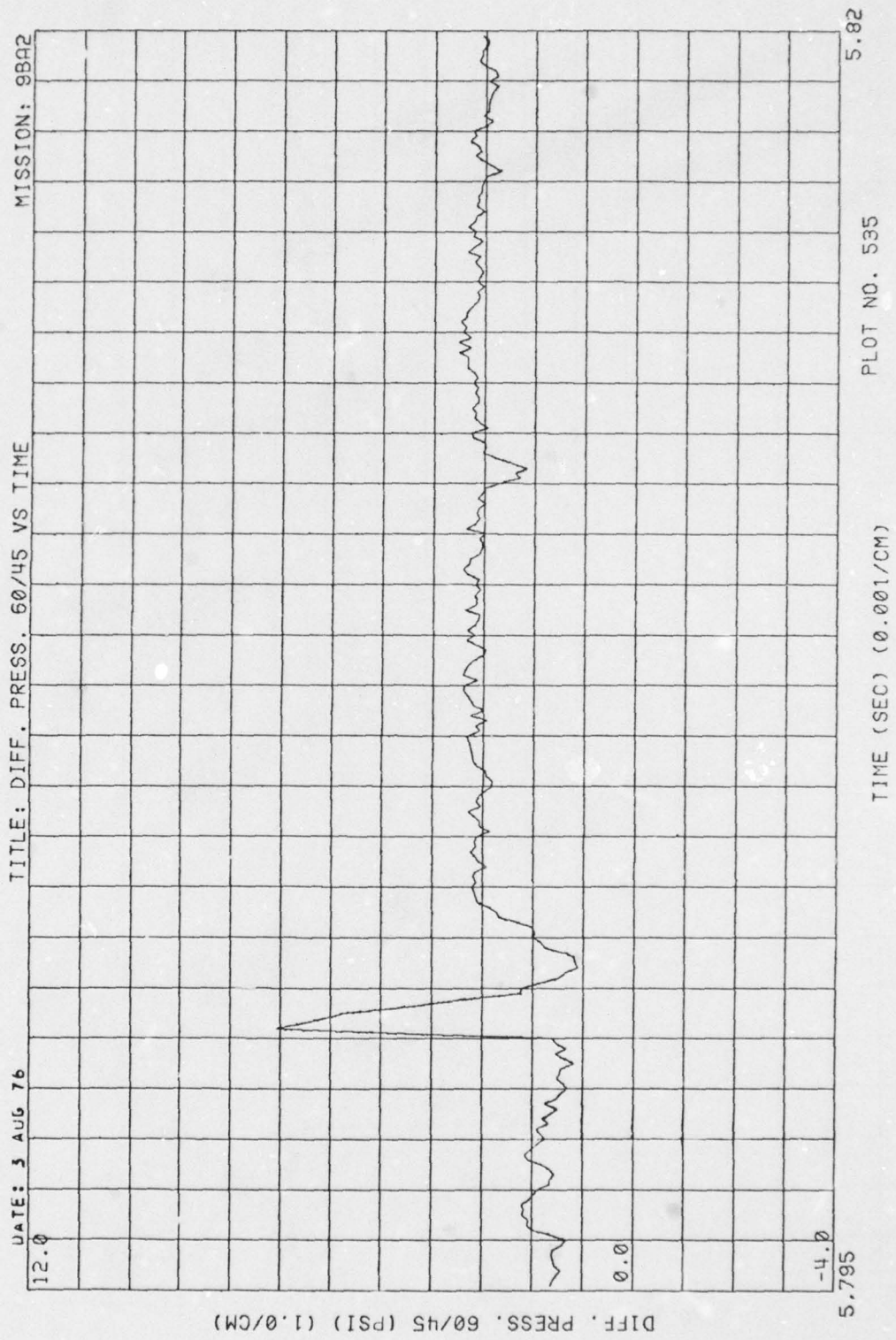


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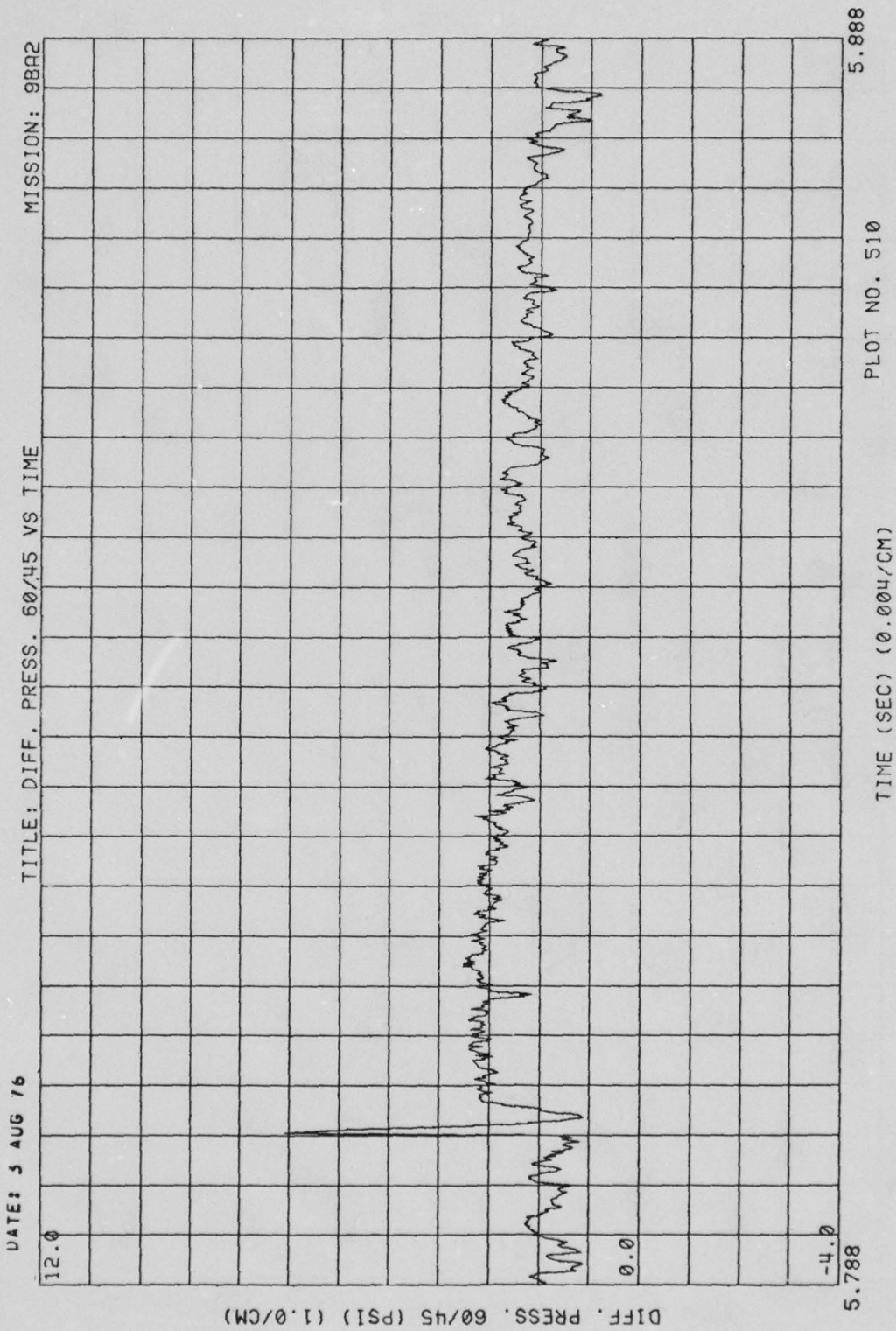


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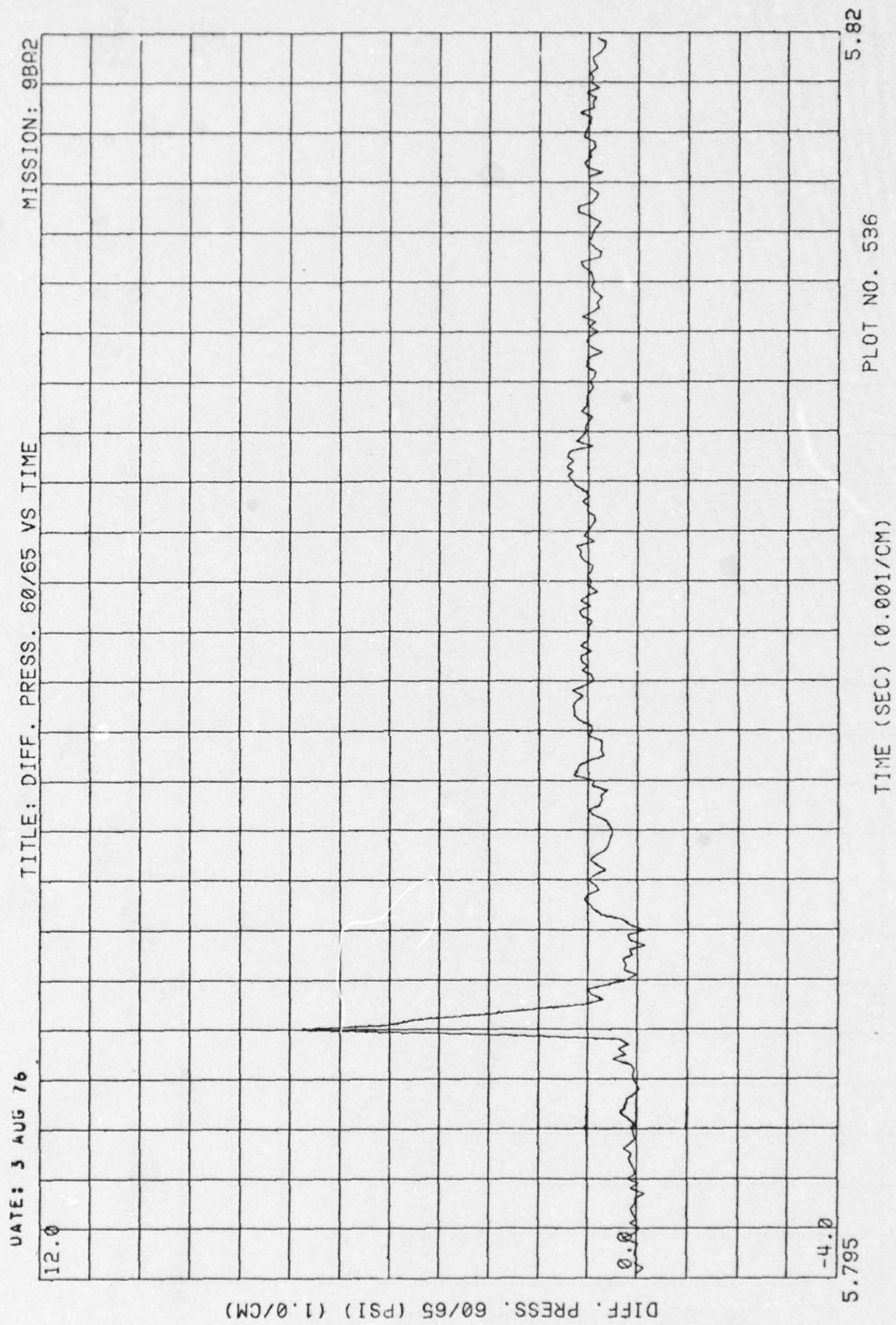


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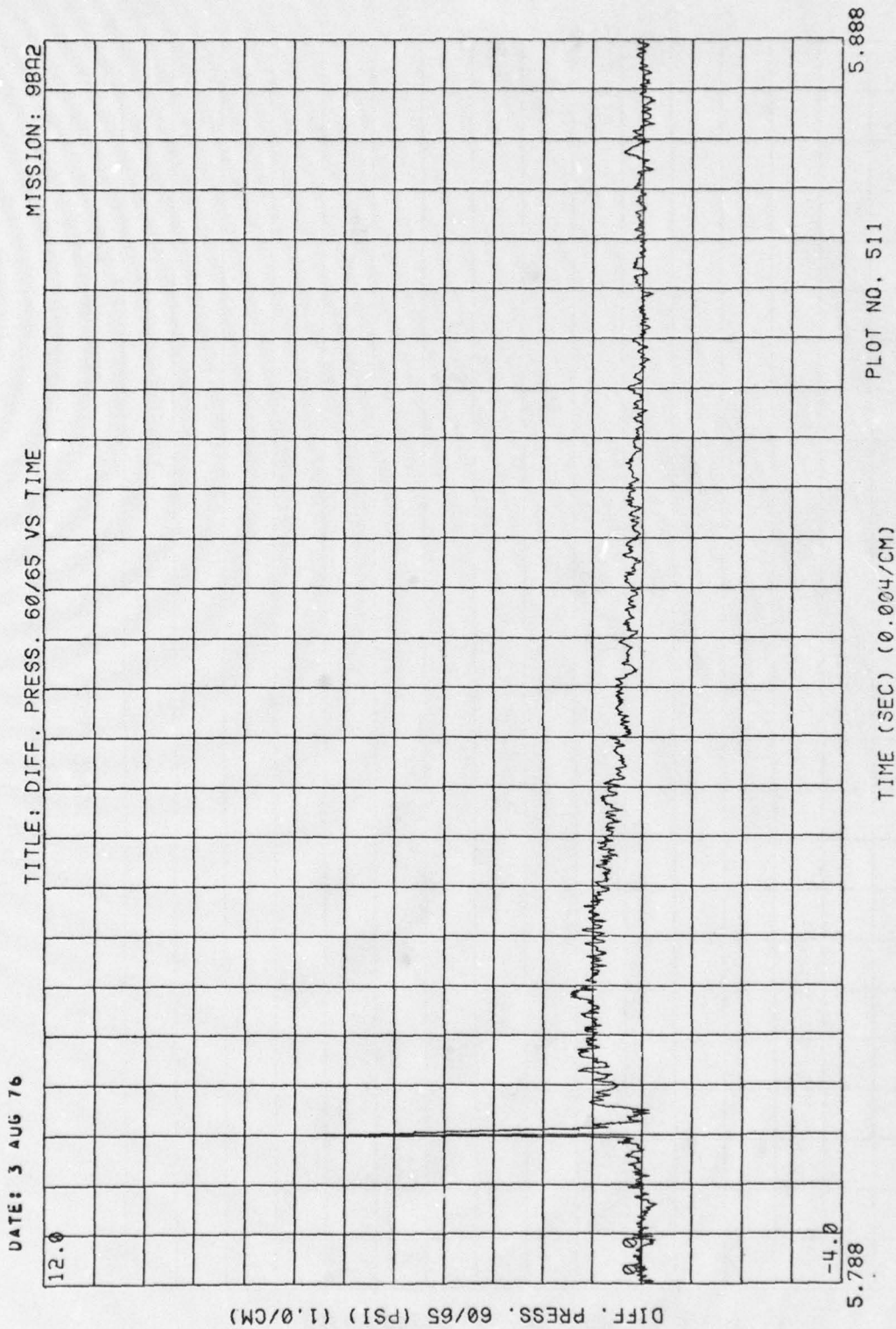


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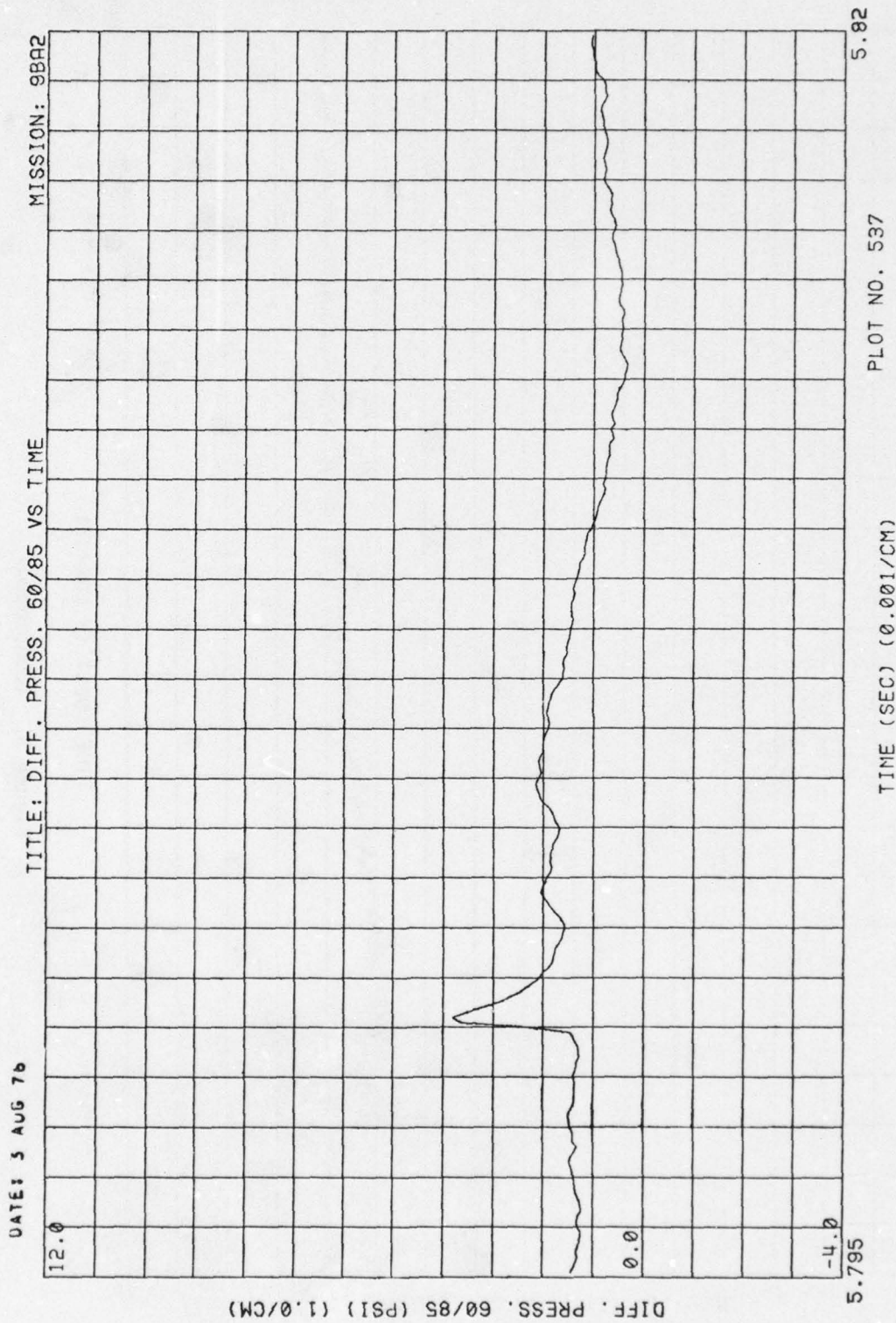


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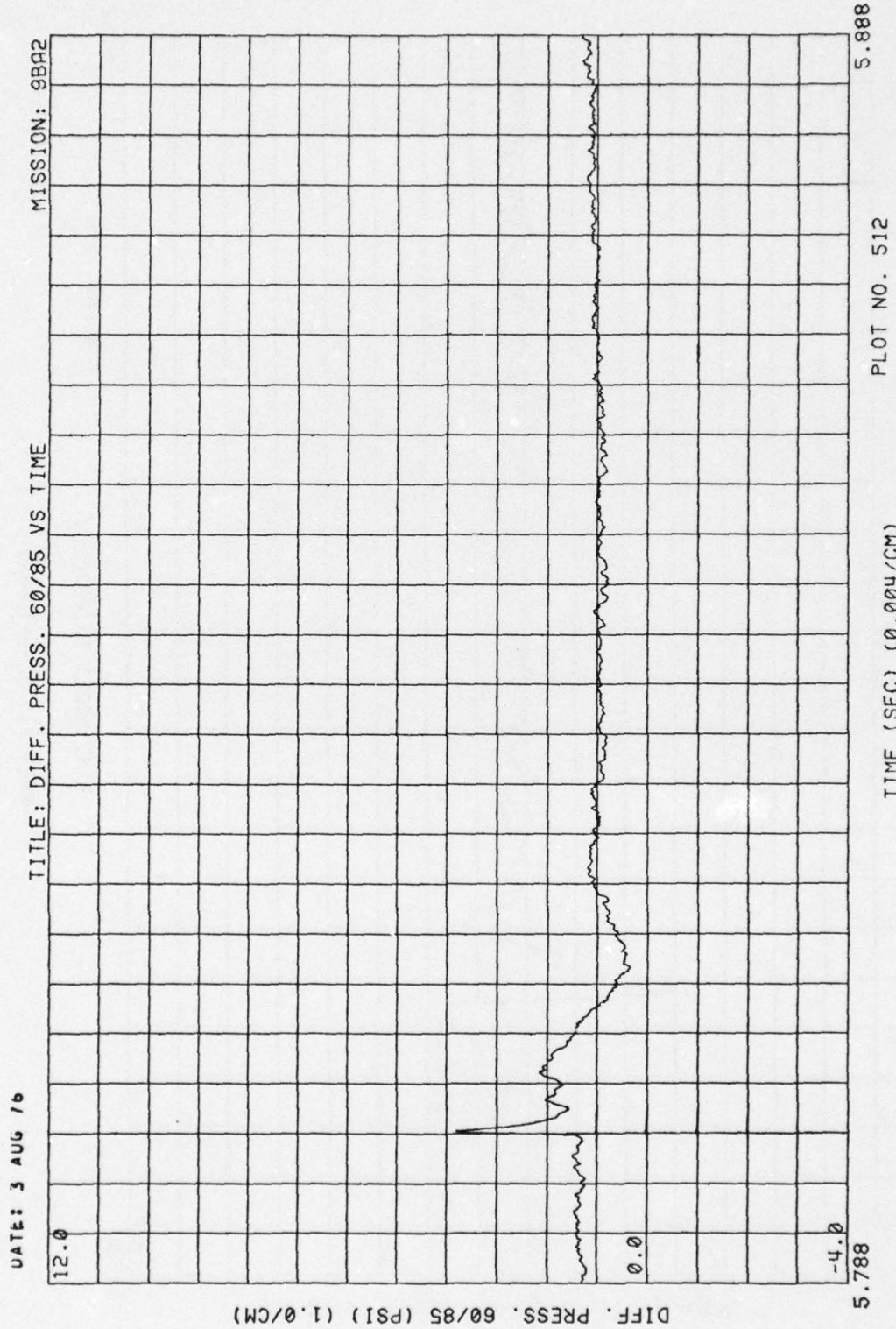


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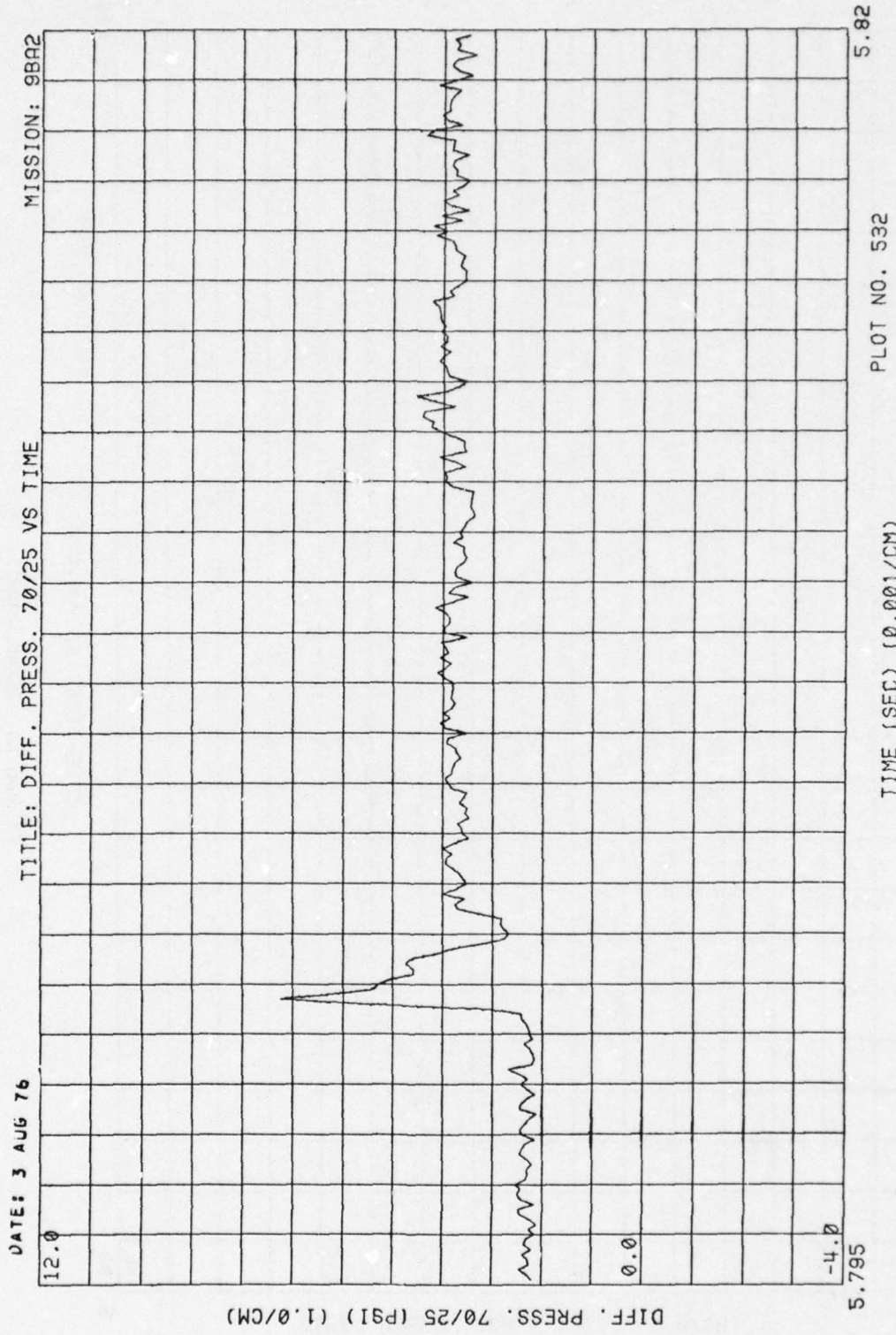


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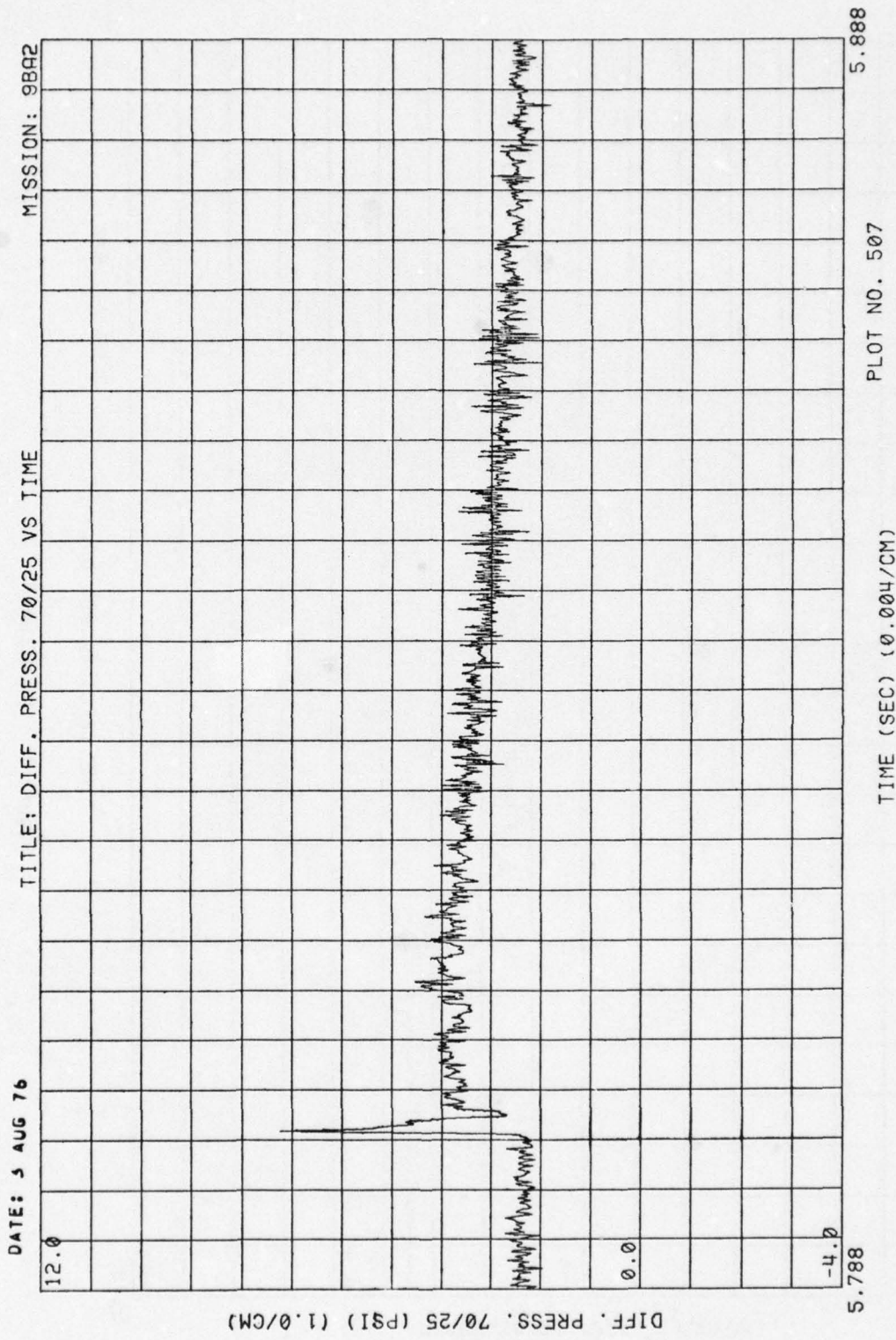


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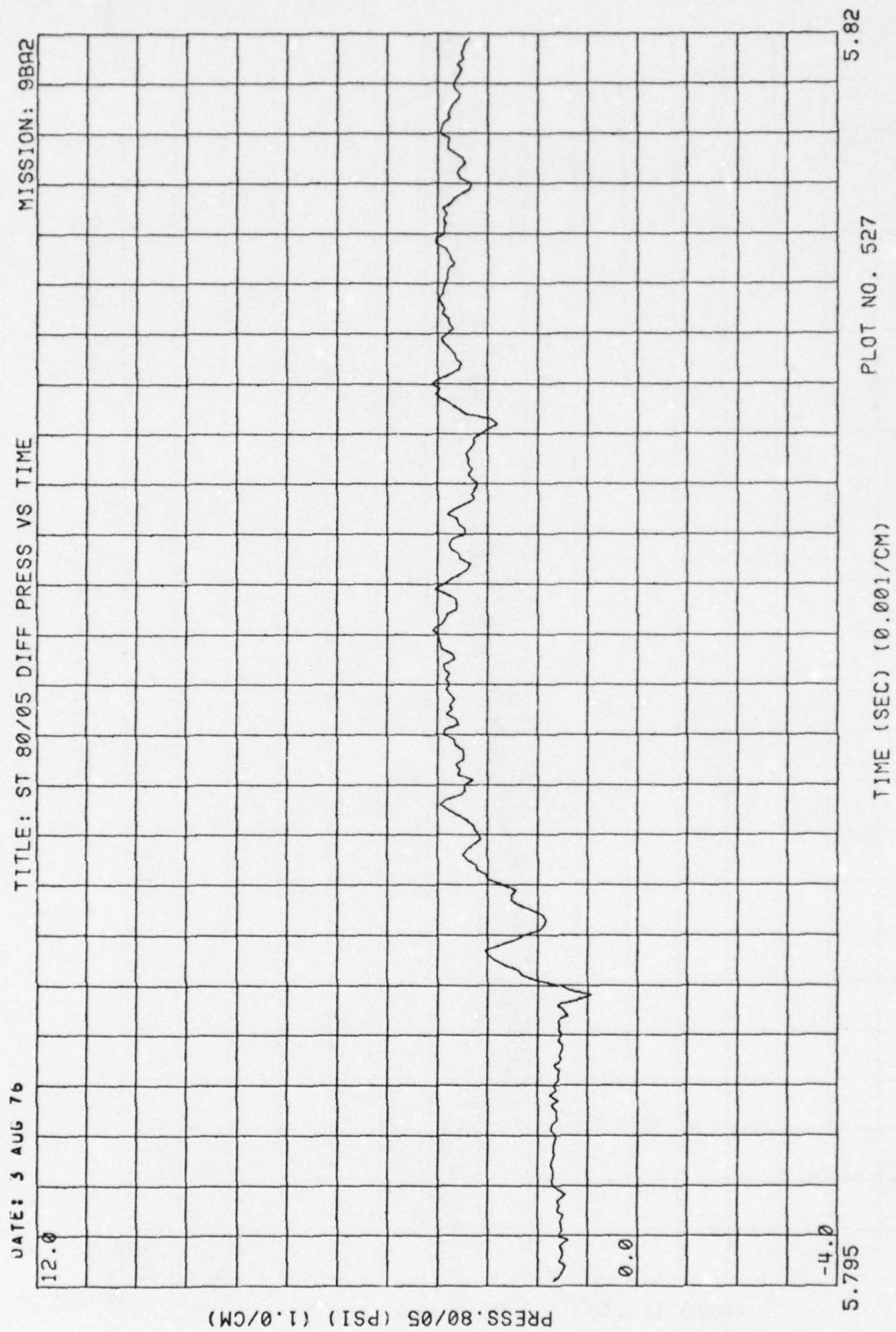


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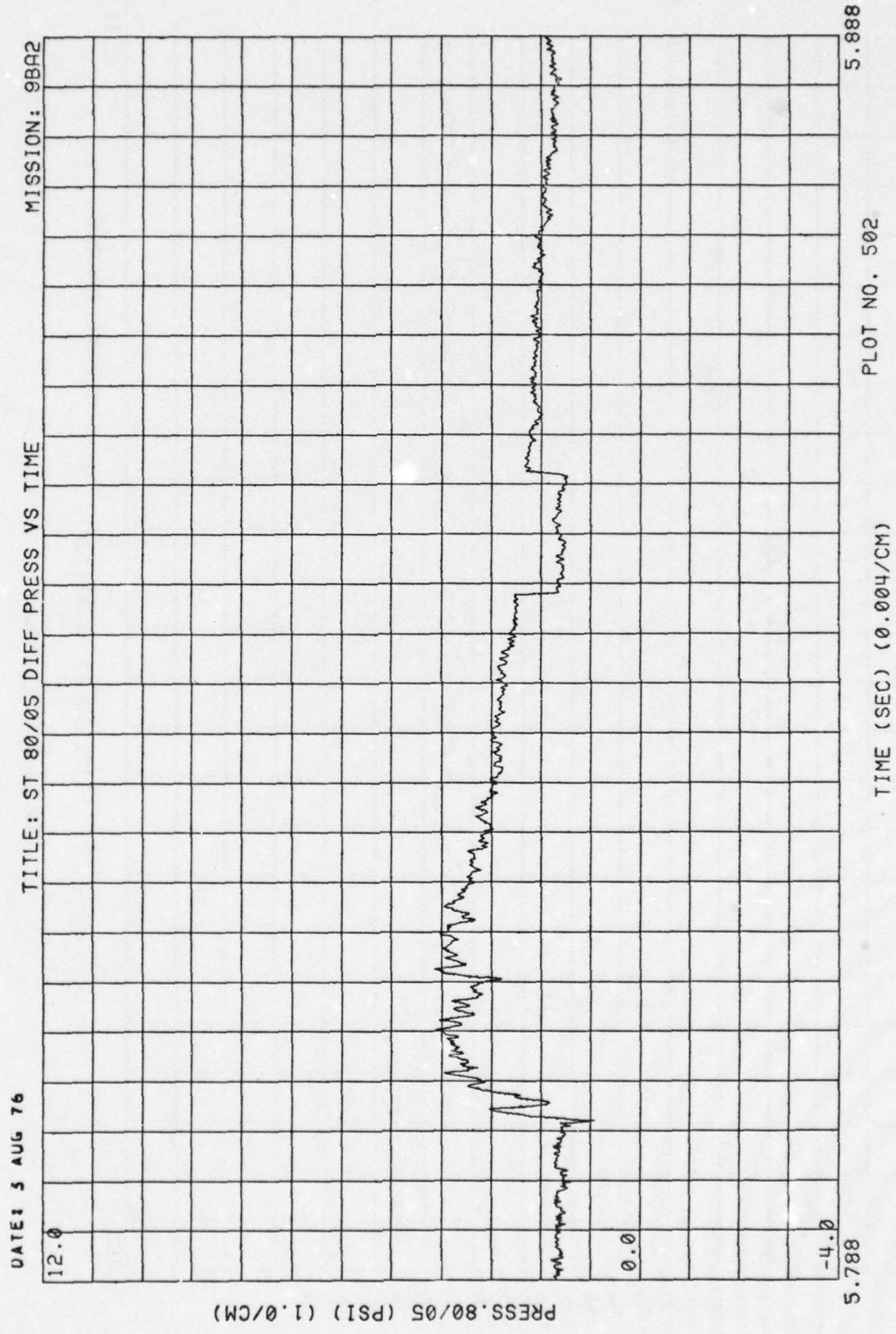


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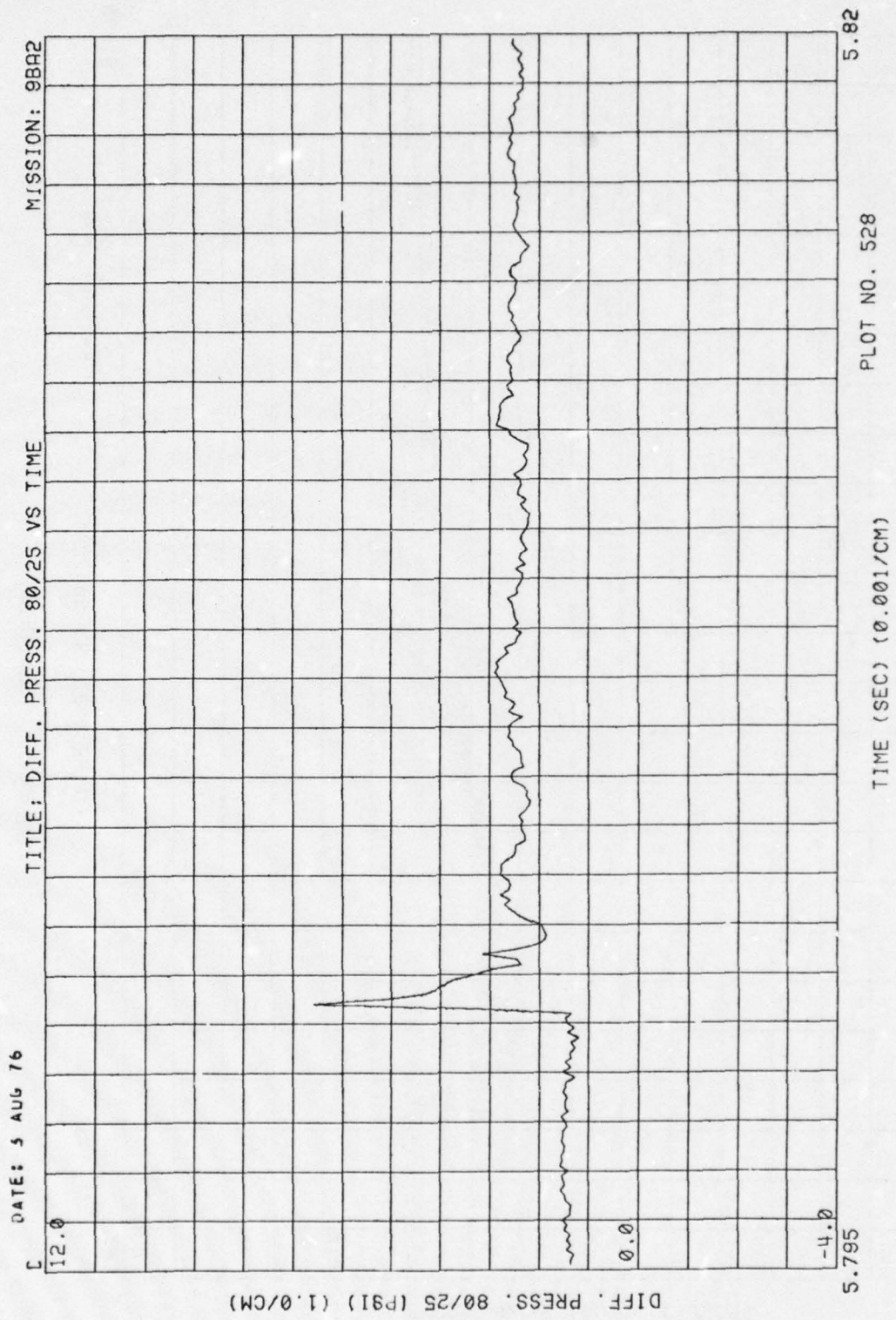


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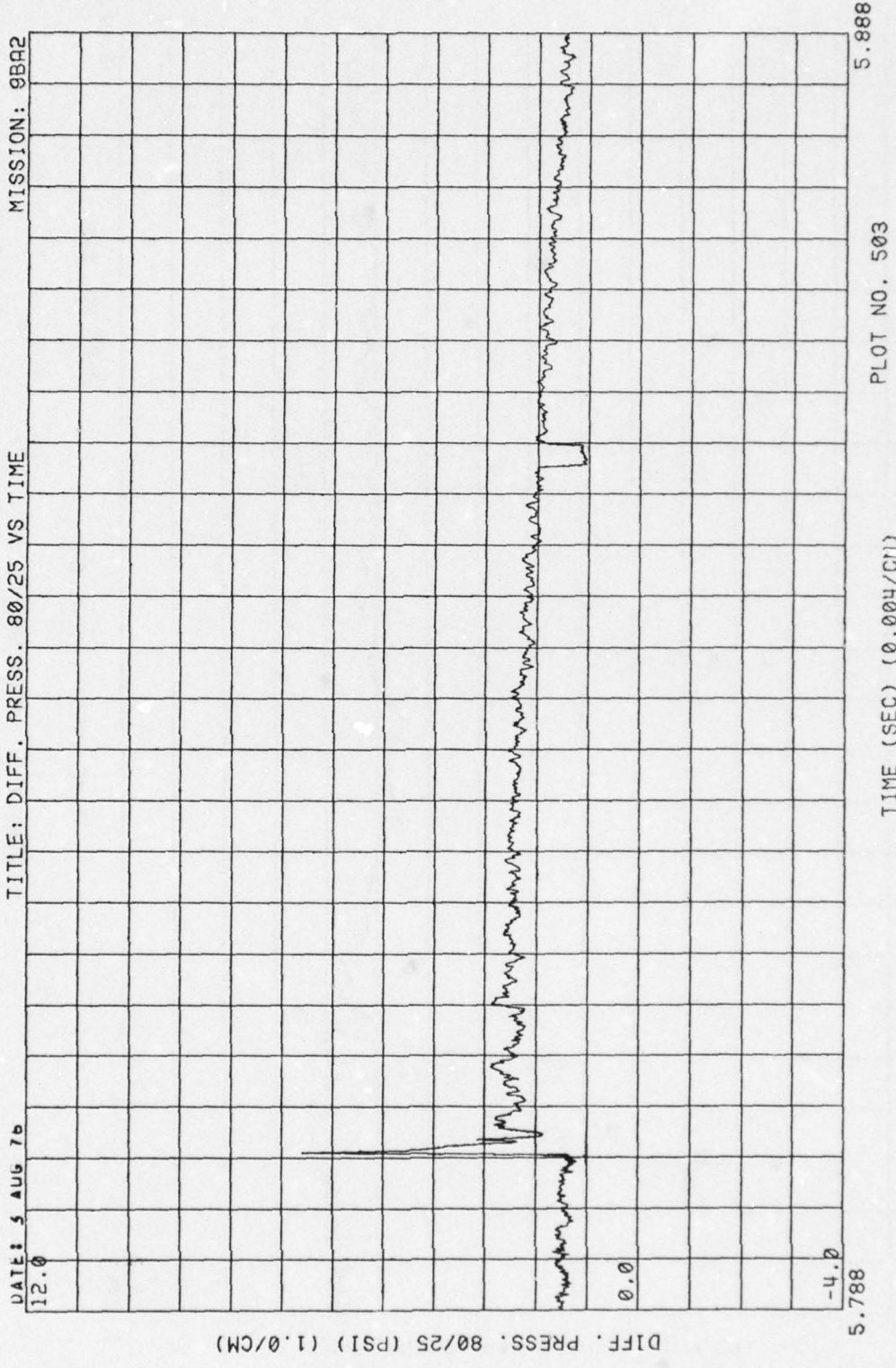


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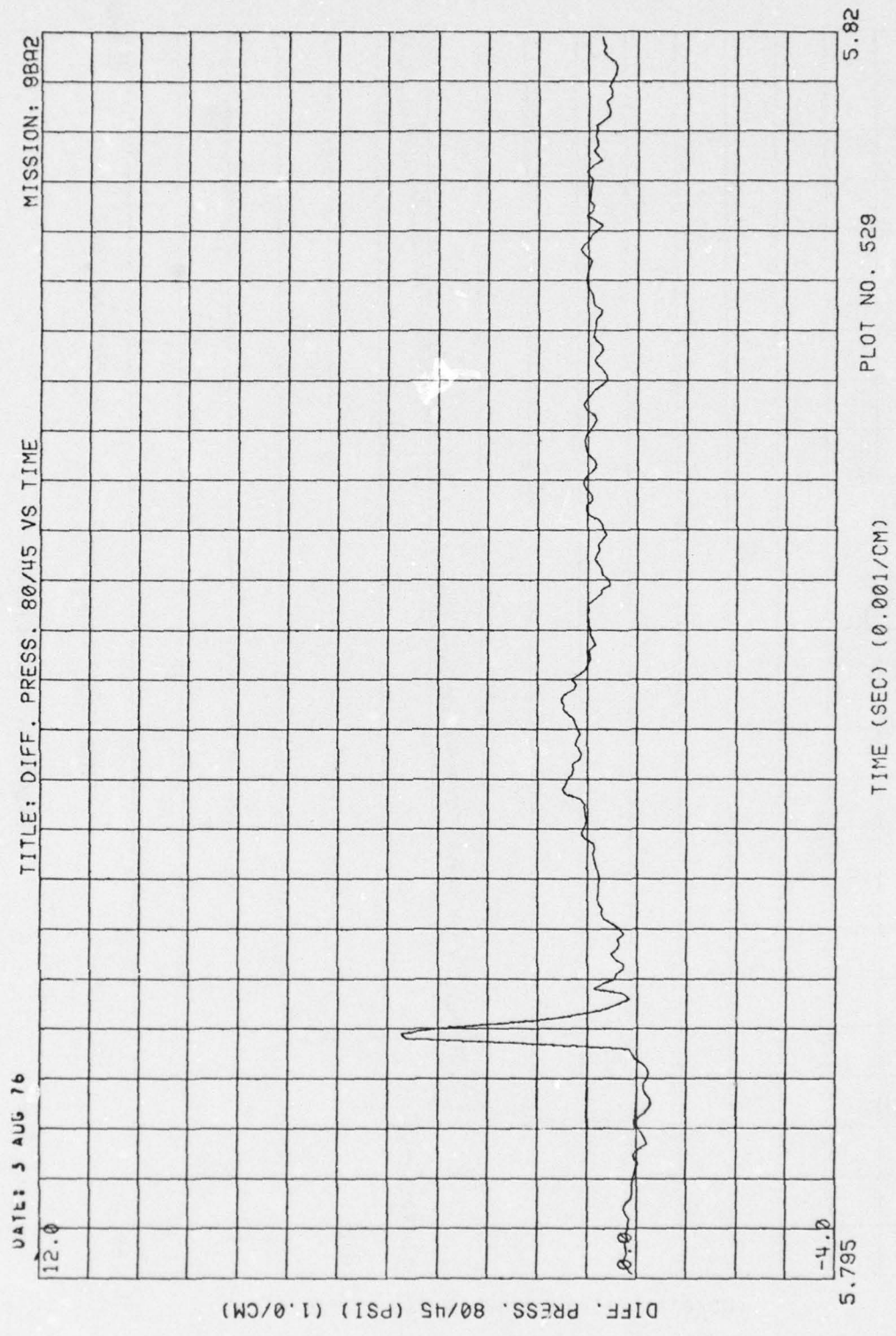


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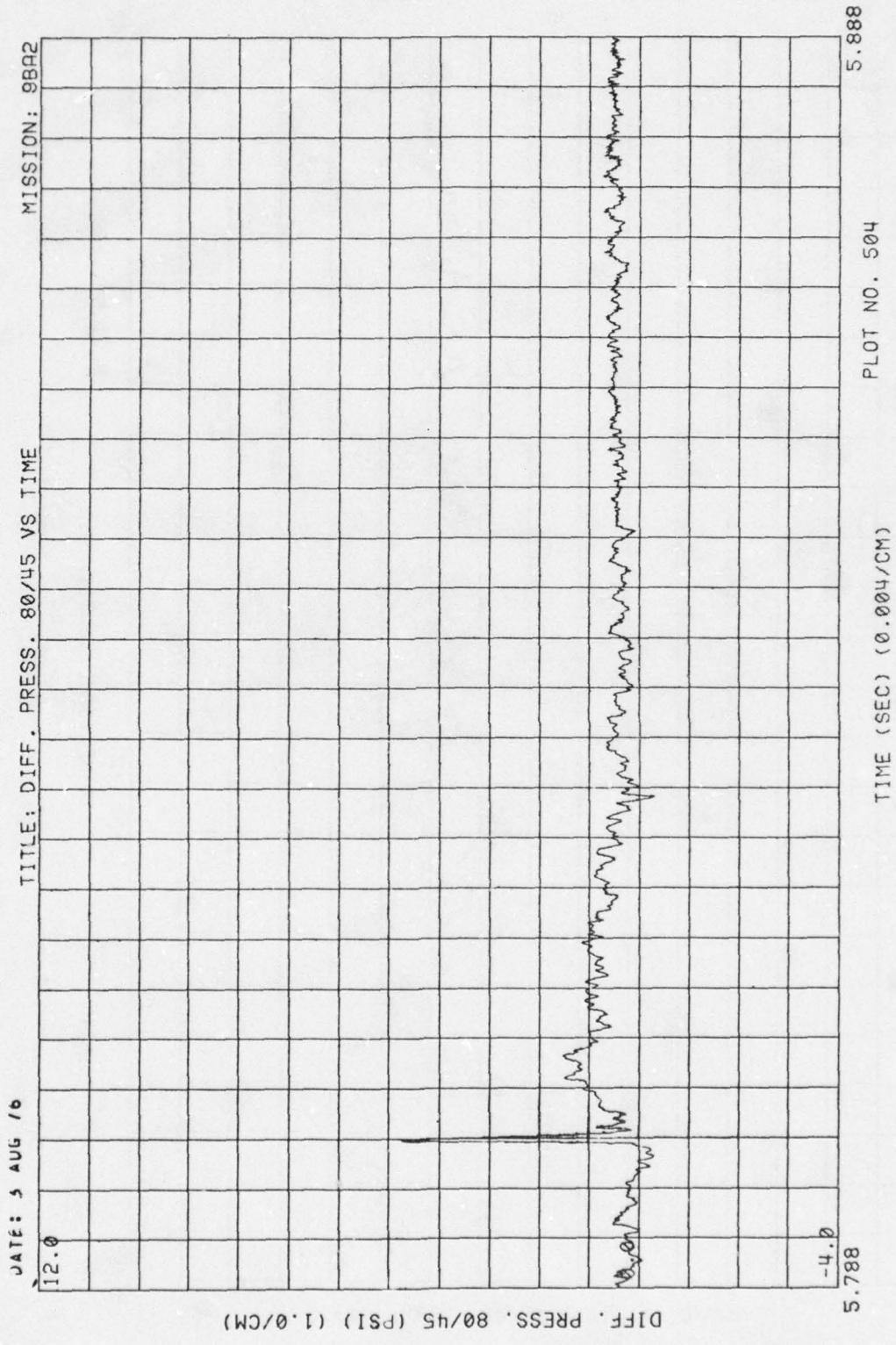


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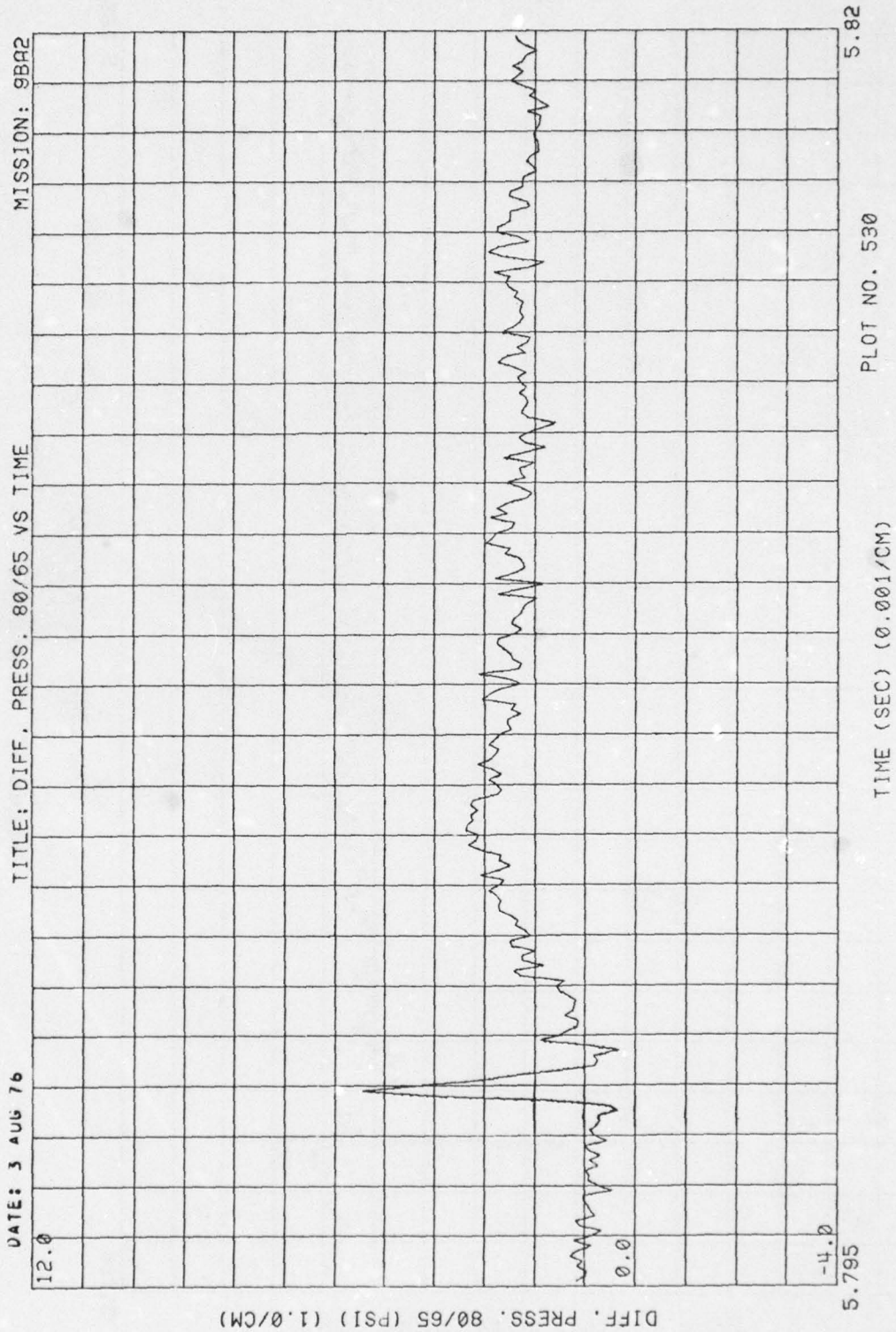
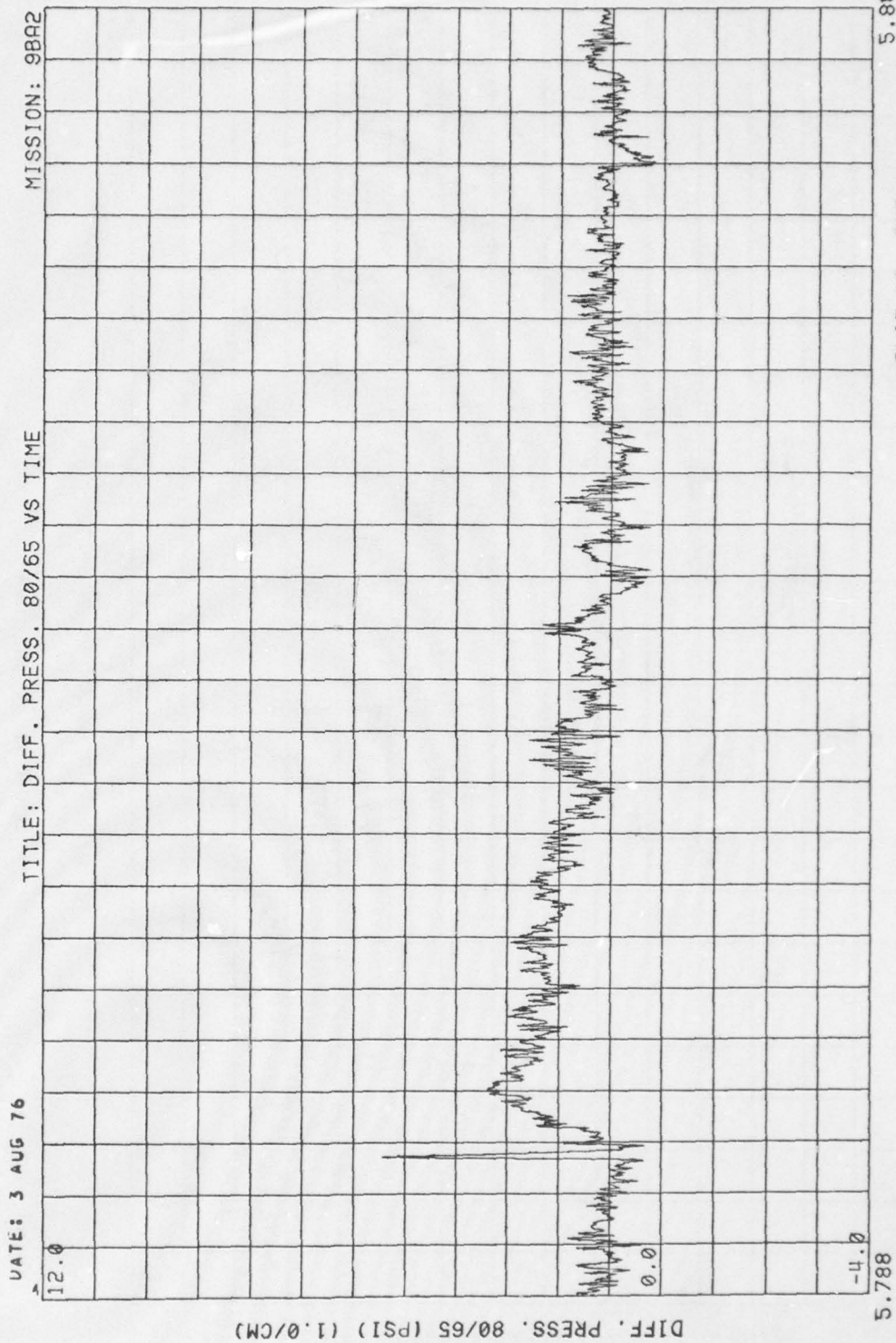


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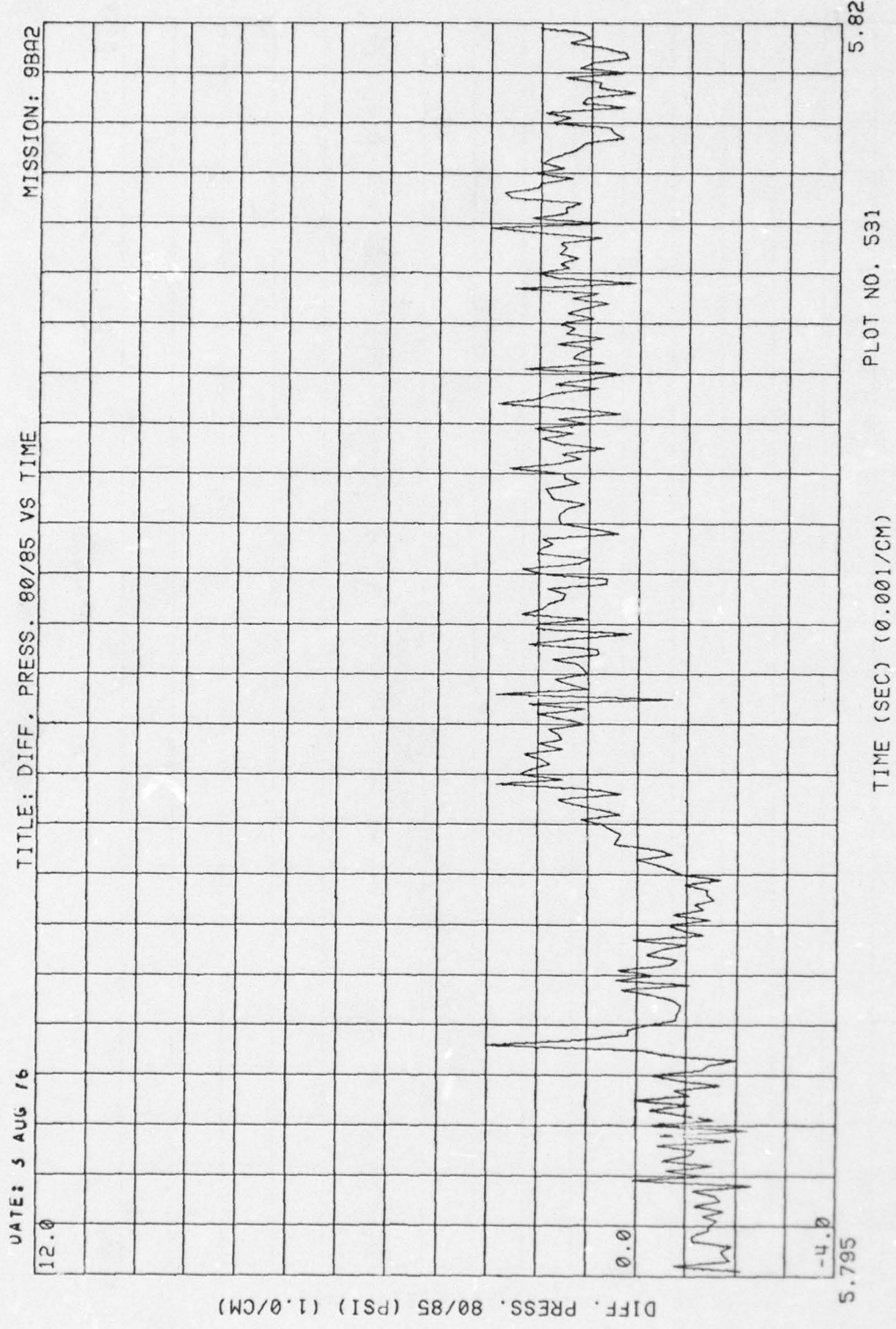


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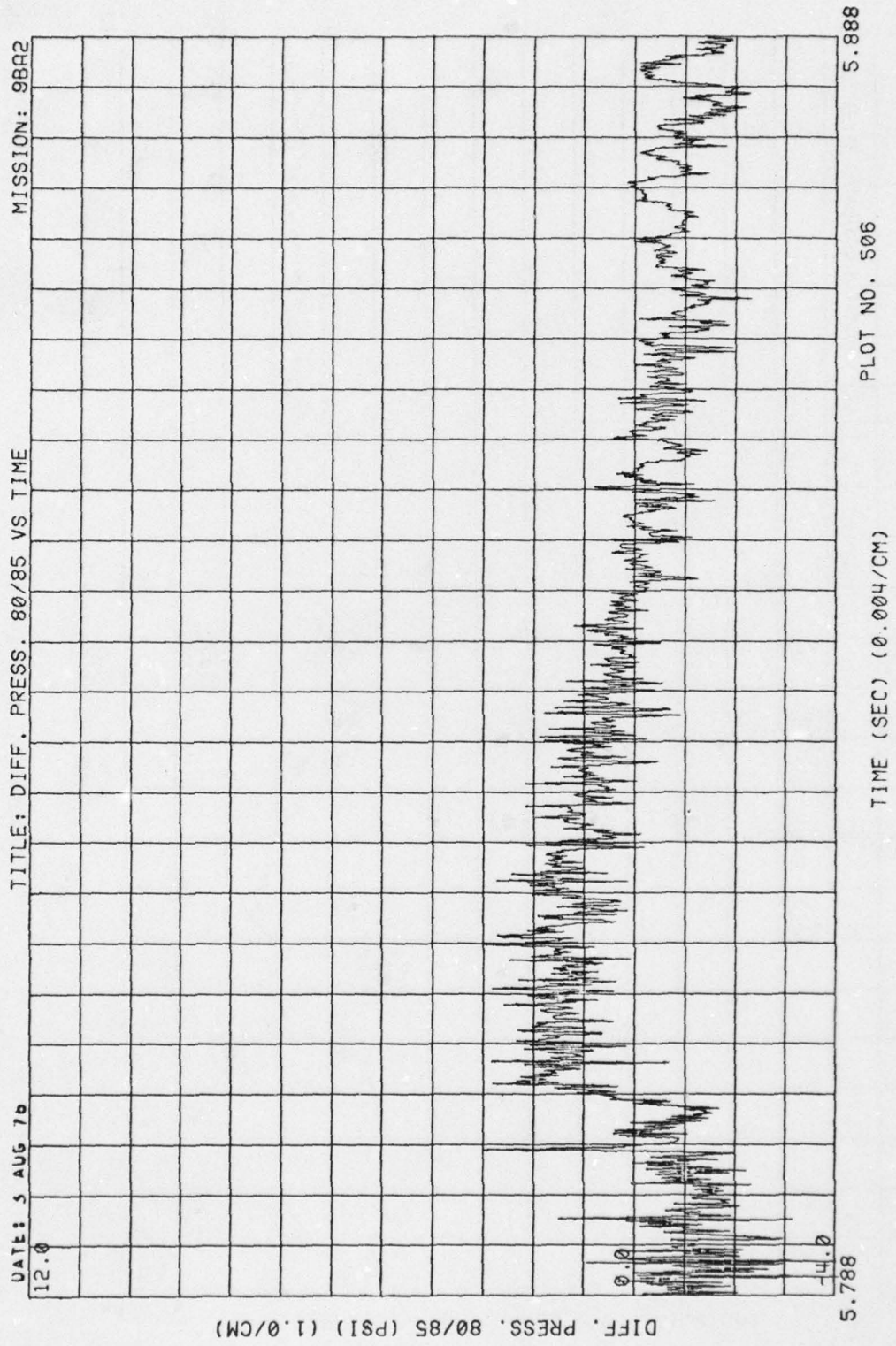


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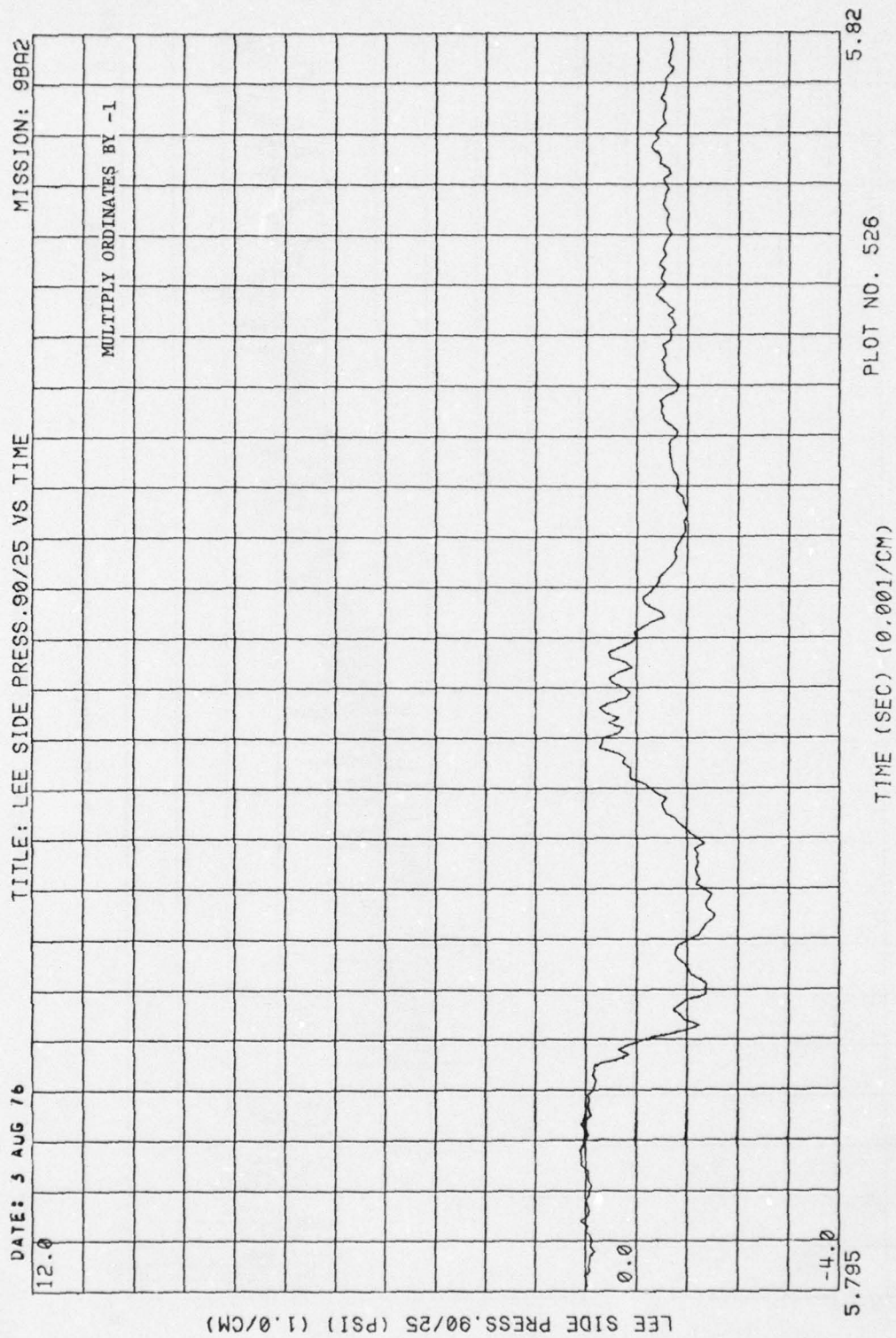


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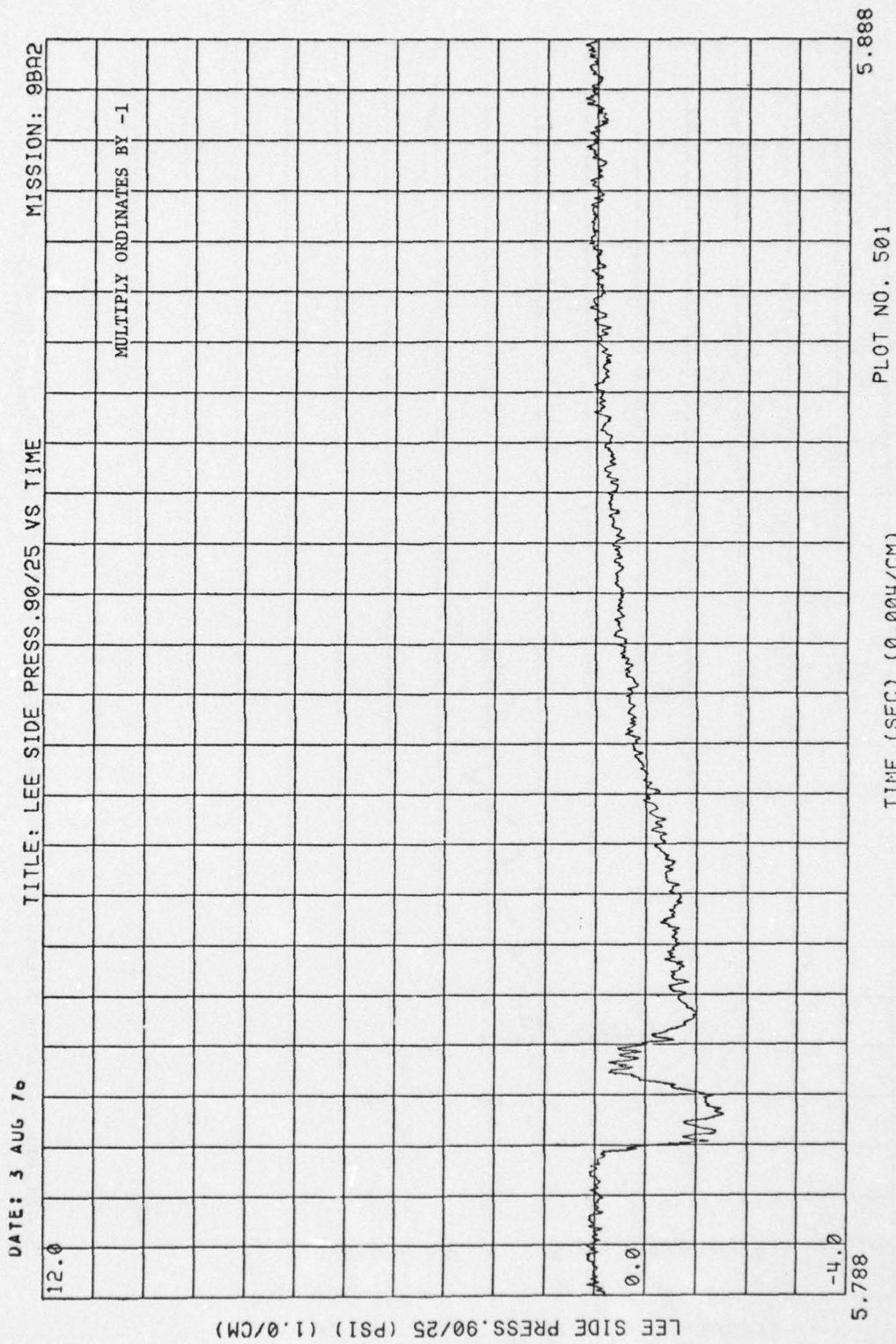


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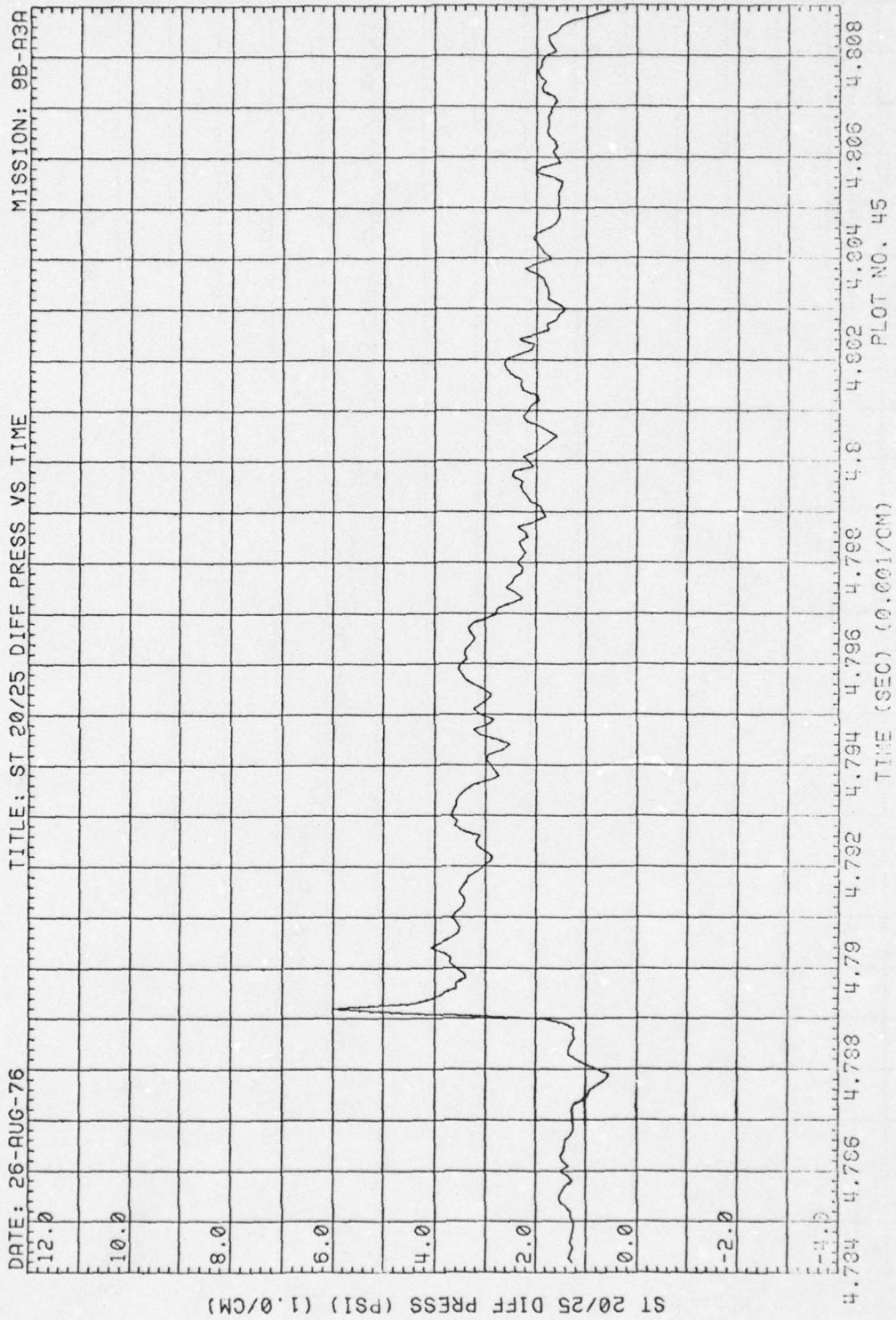


Figure 6. Wing Pressures, Run 9B-A3. Intercept 1, $\phi = 20.1$ deg., $\Delta p_s = 3.6$ psi.

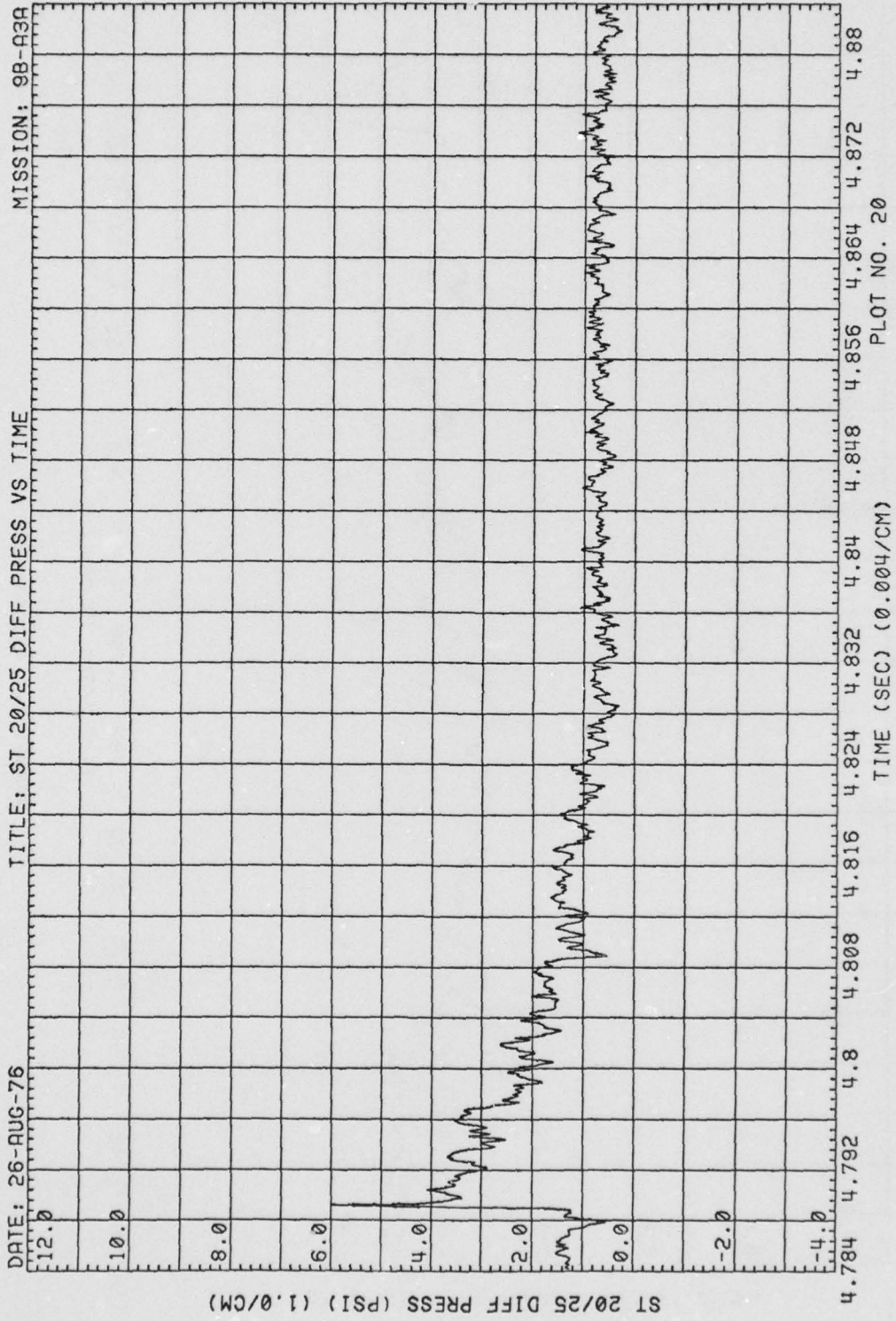


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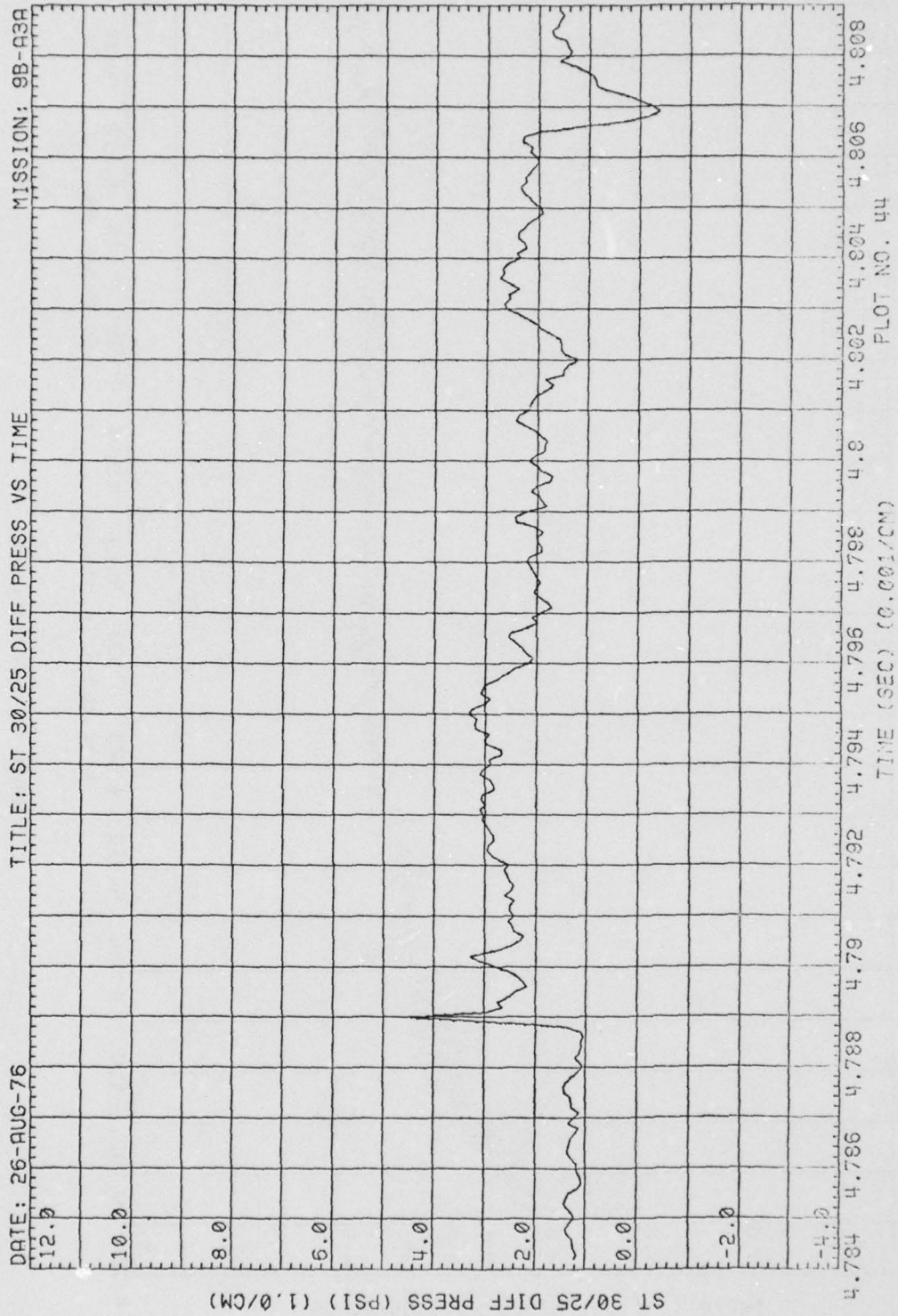


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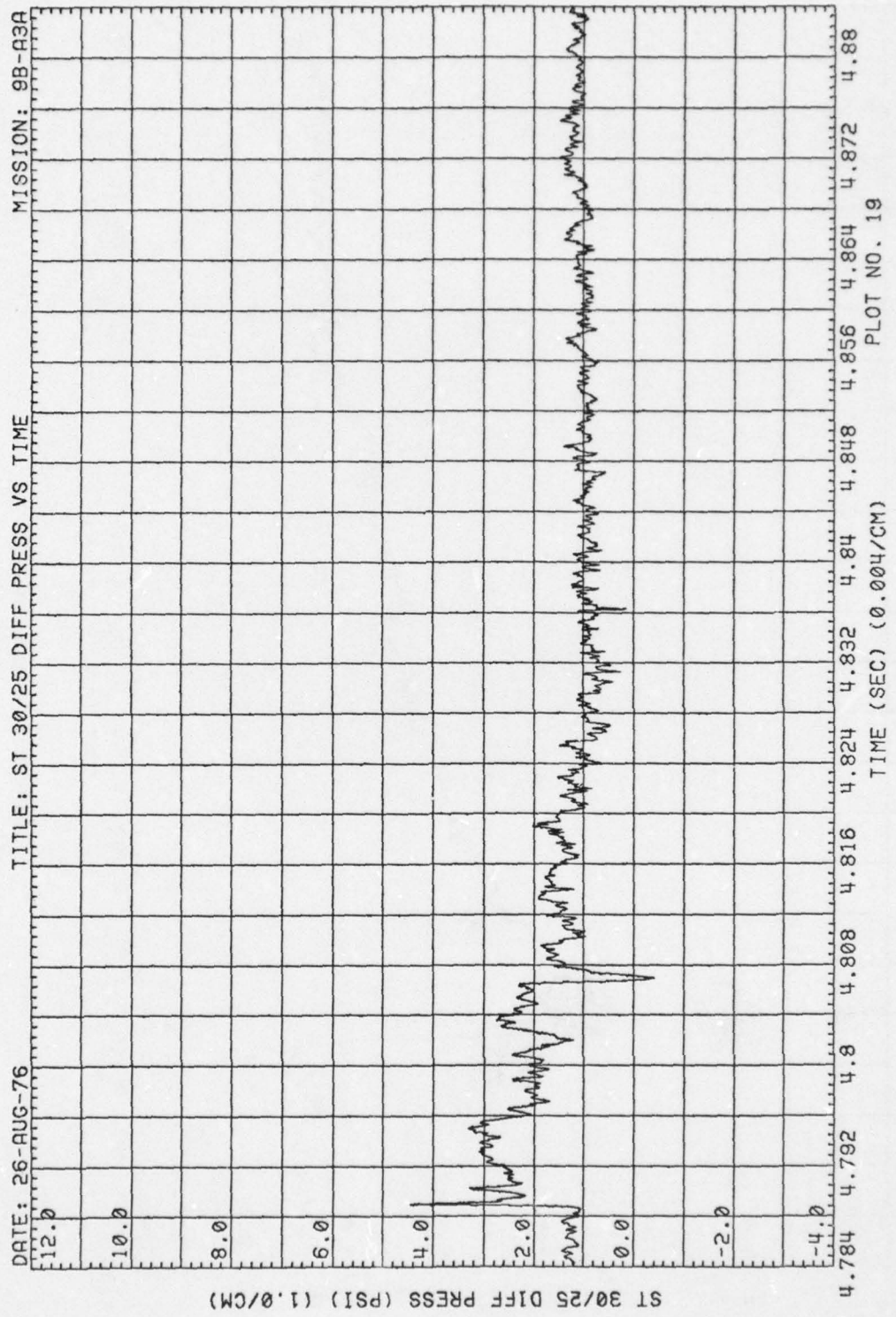


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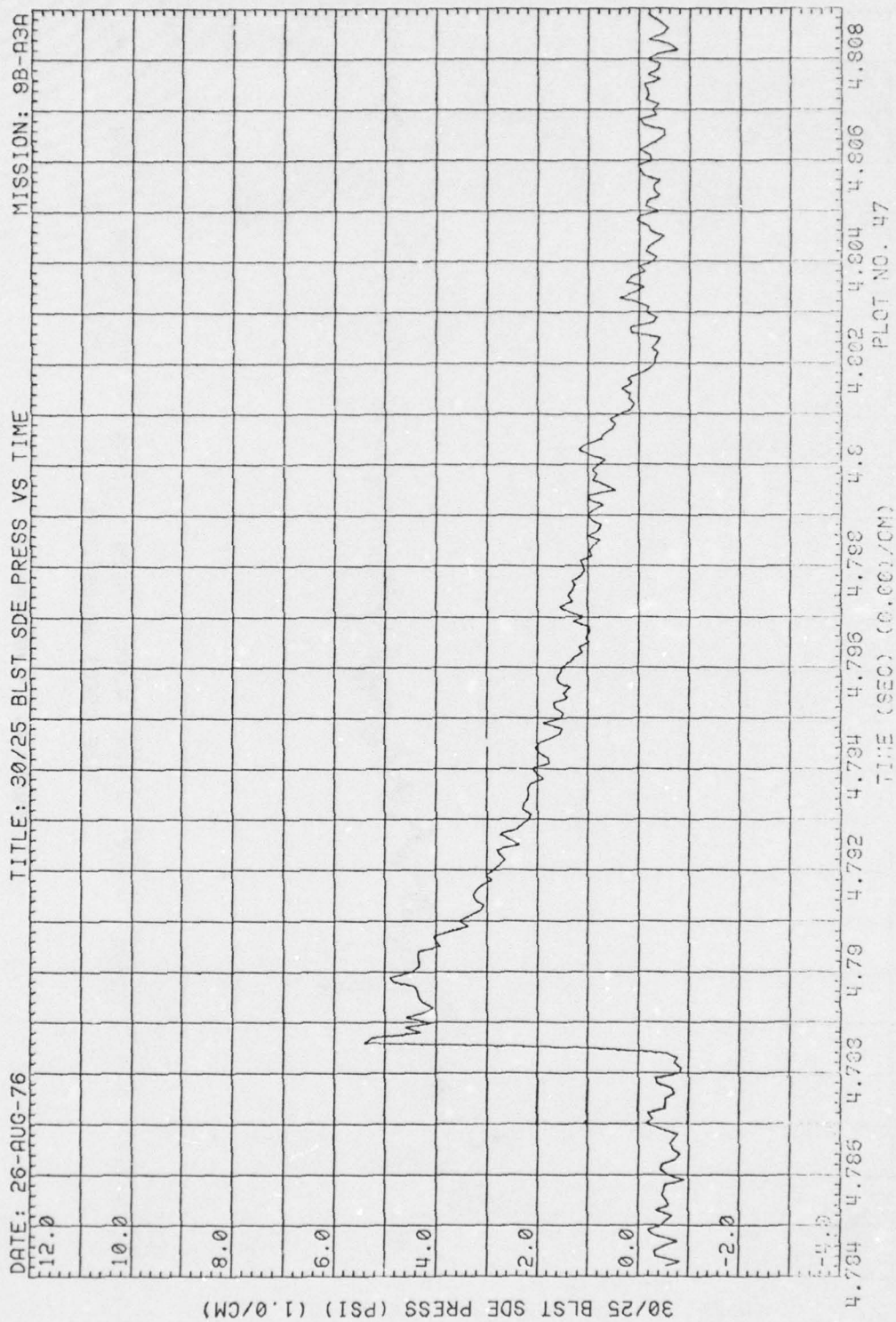


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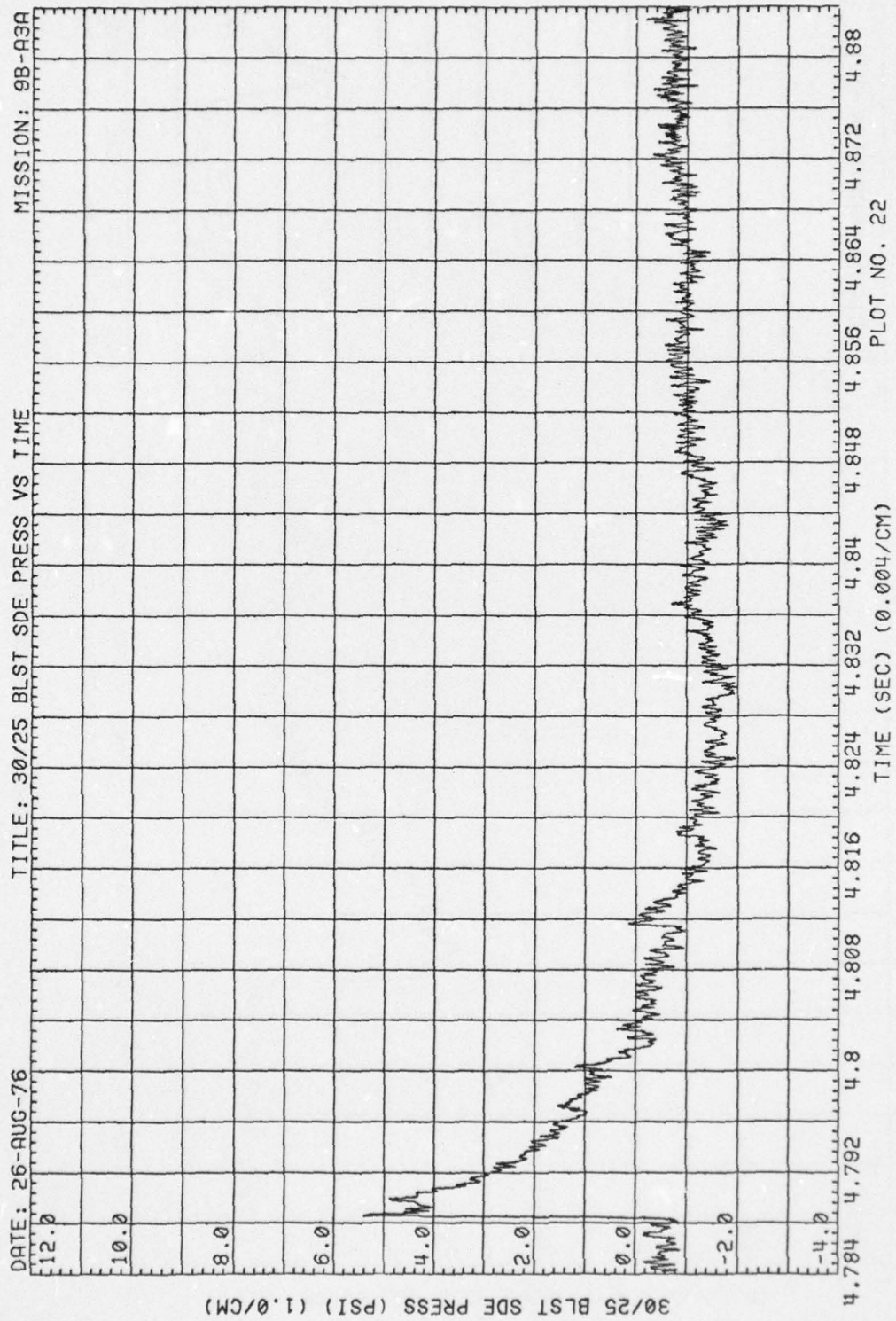


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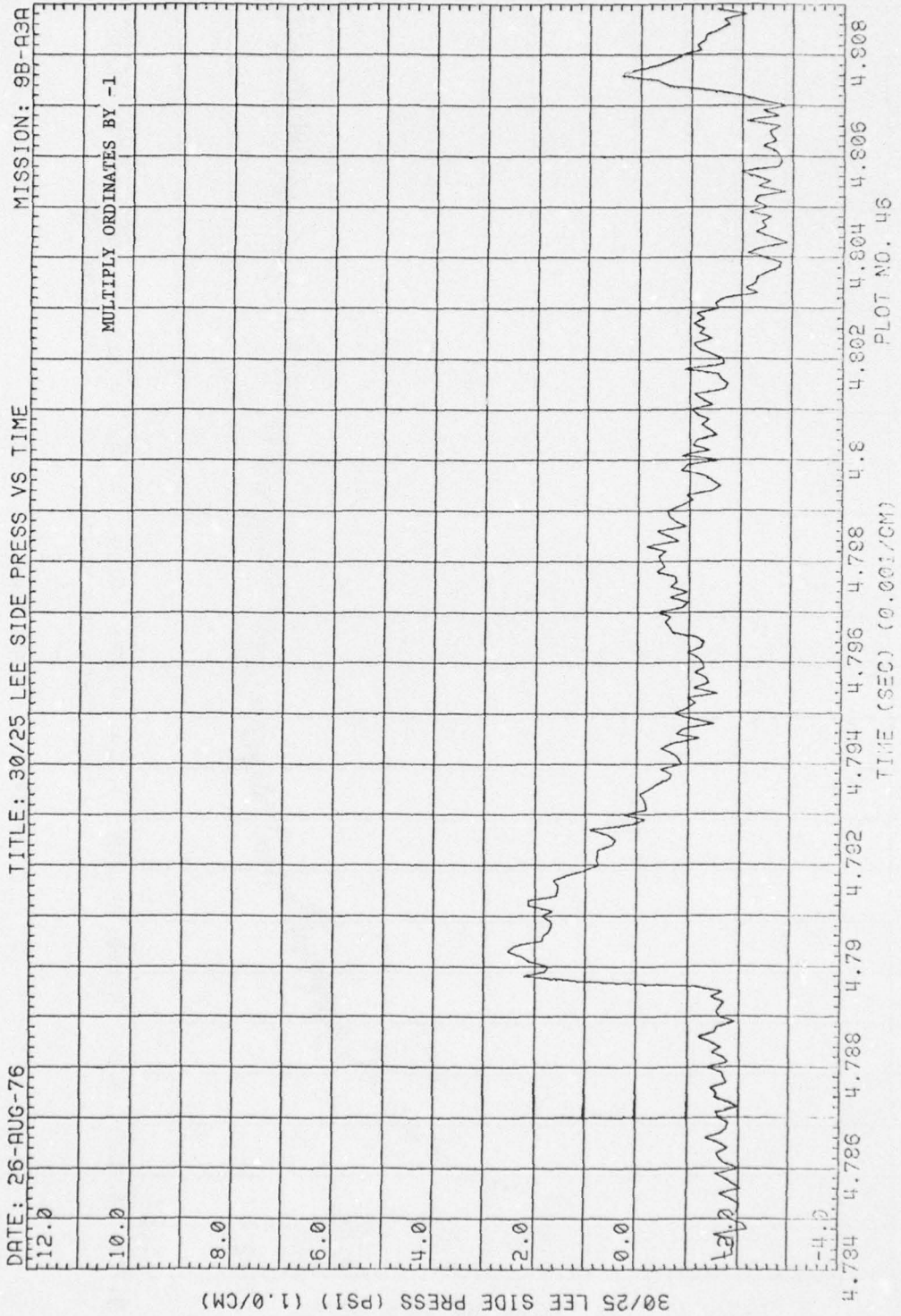


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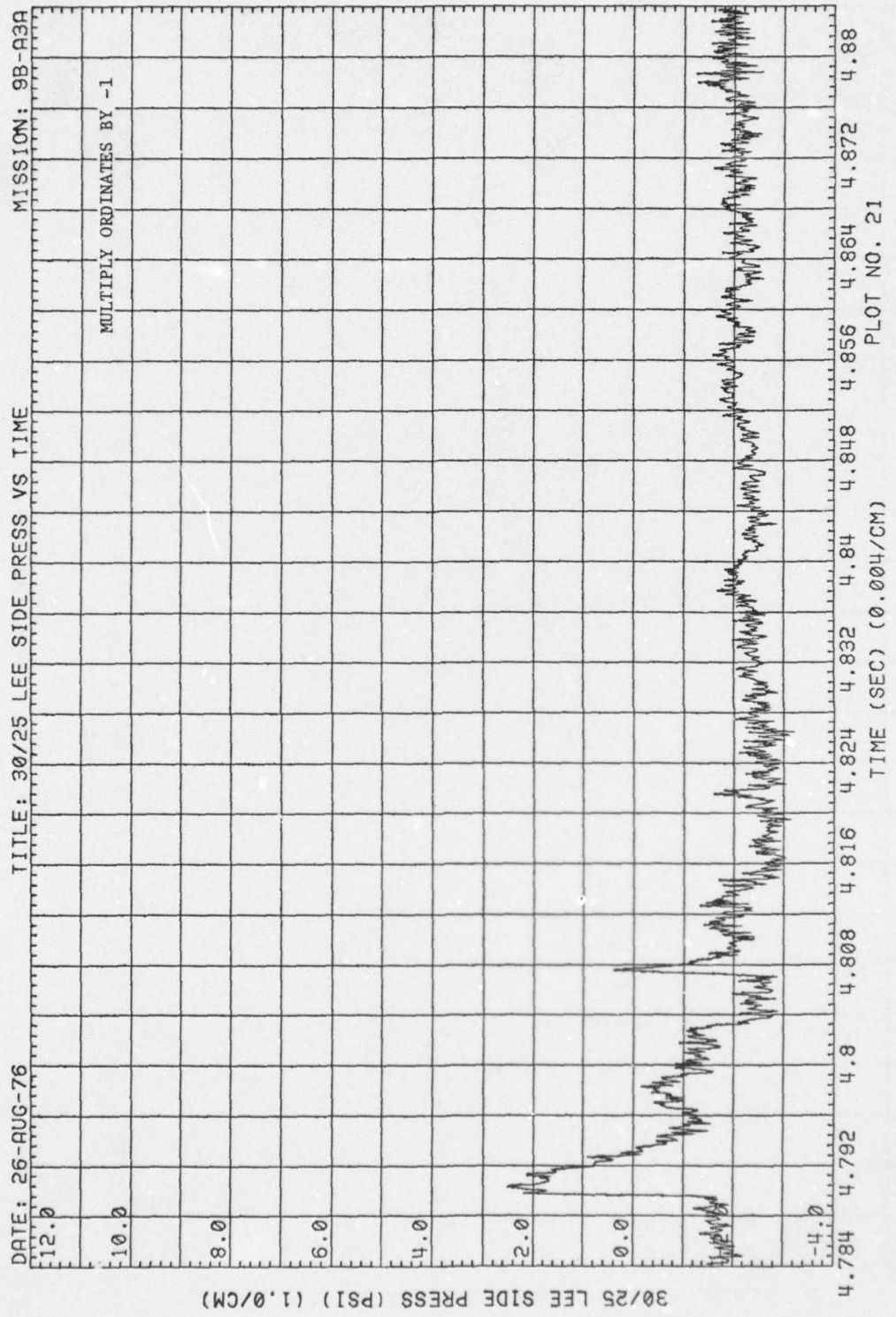


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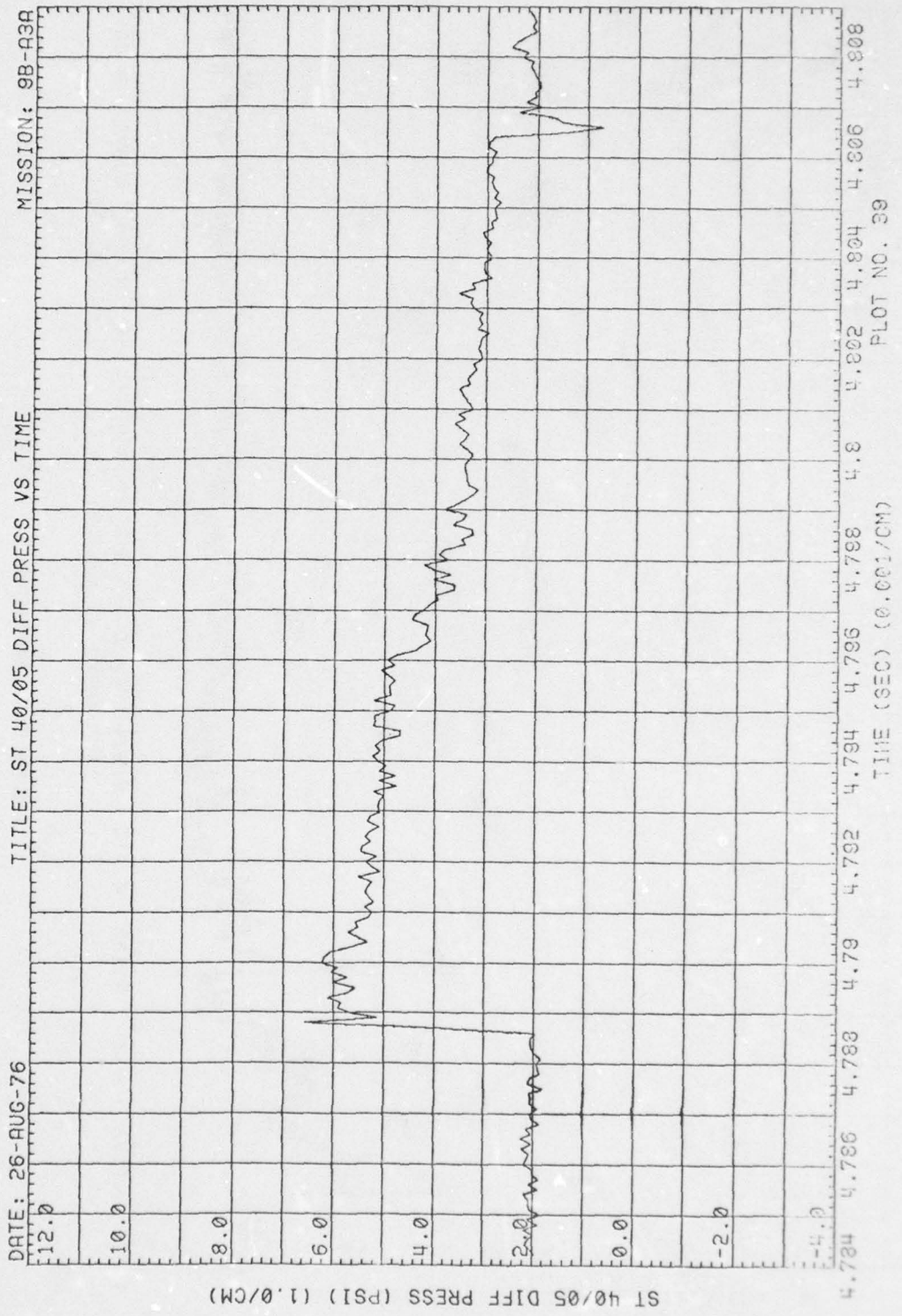


Figure 6. (Continued)

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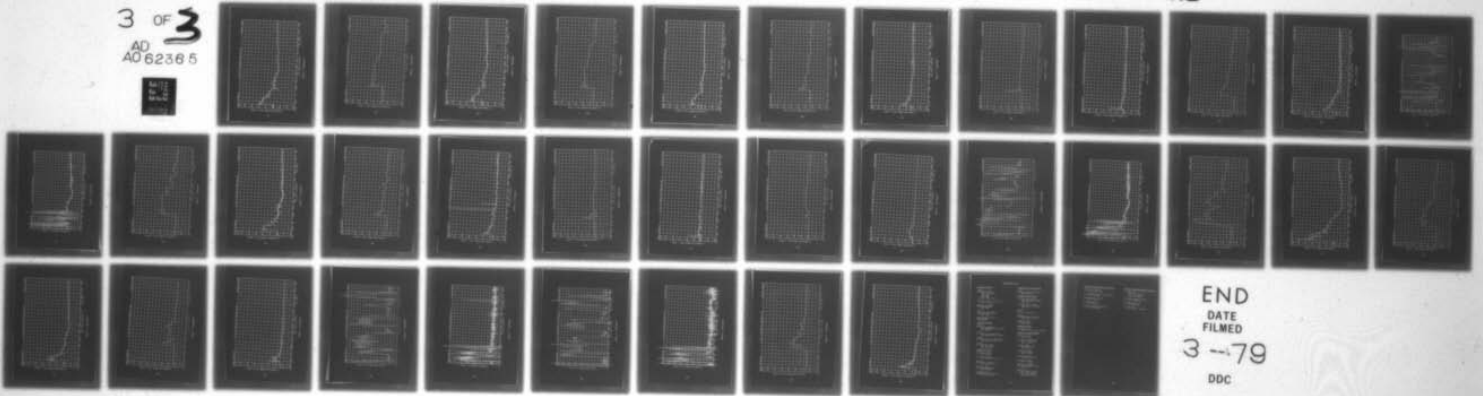
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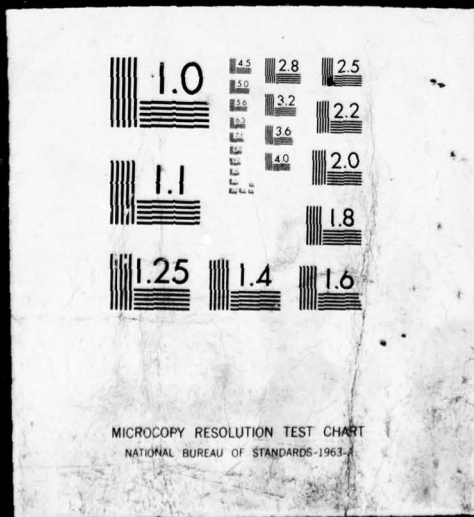
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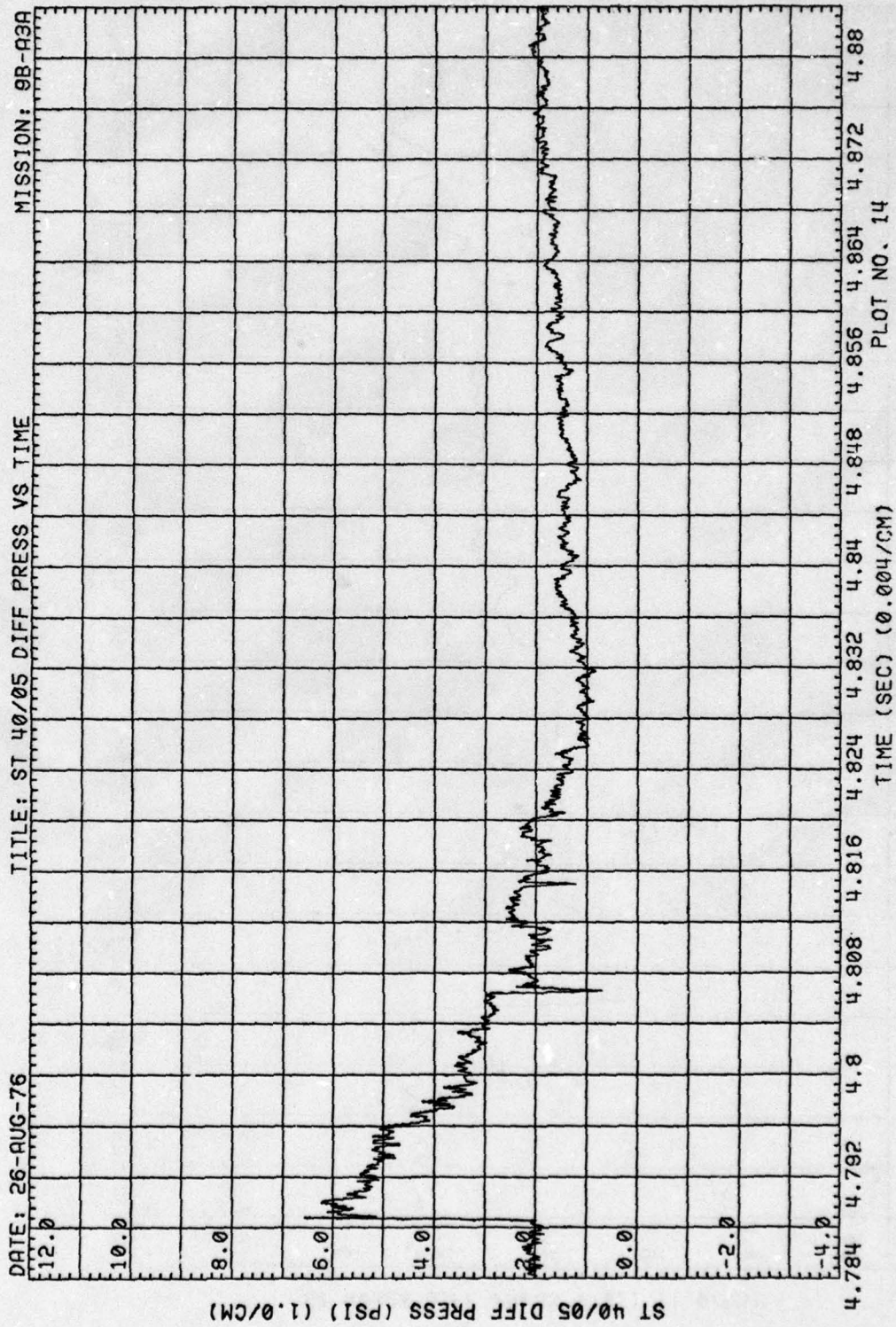


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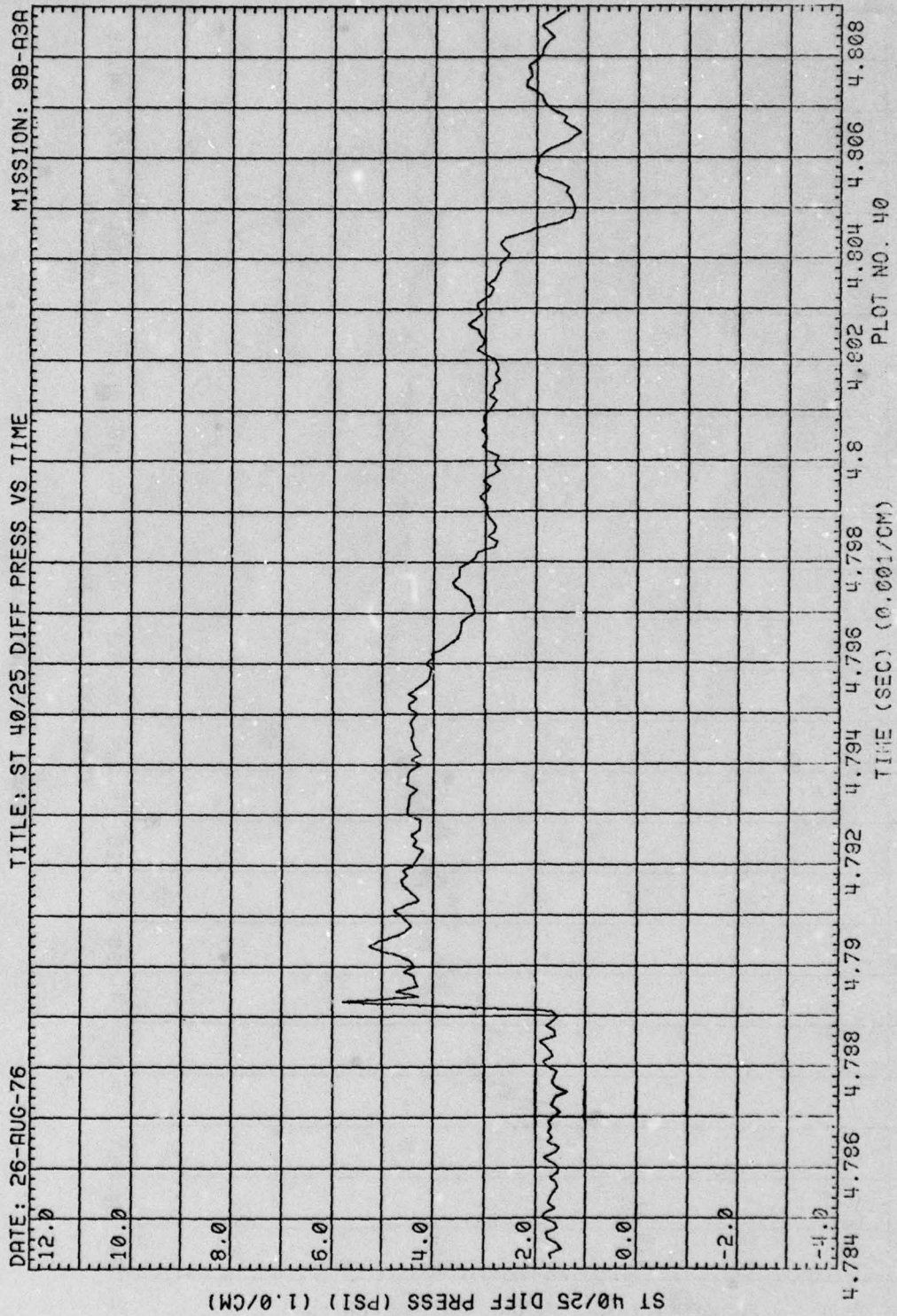


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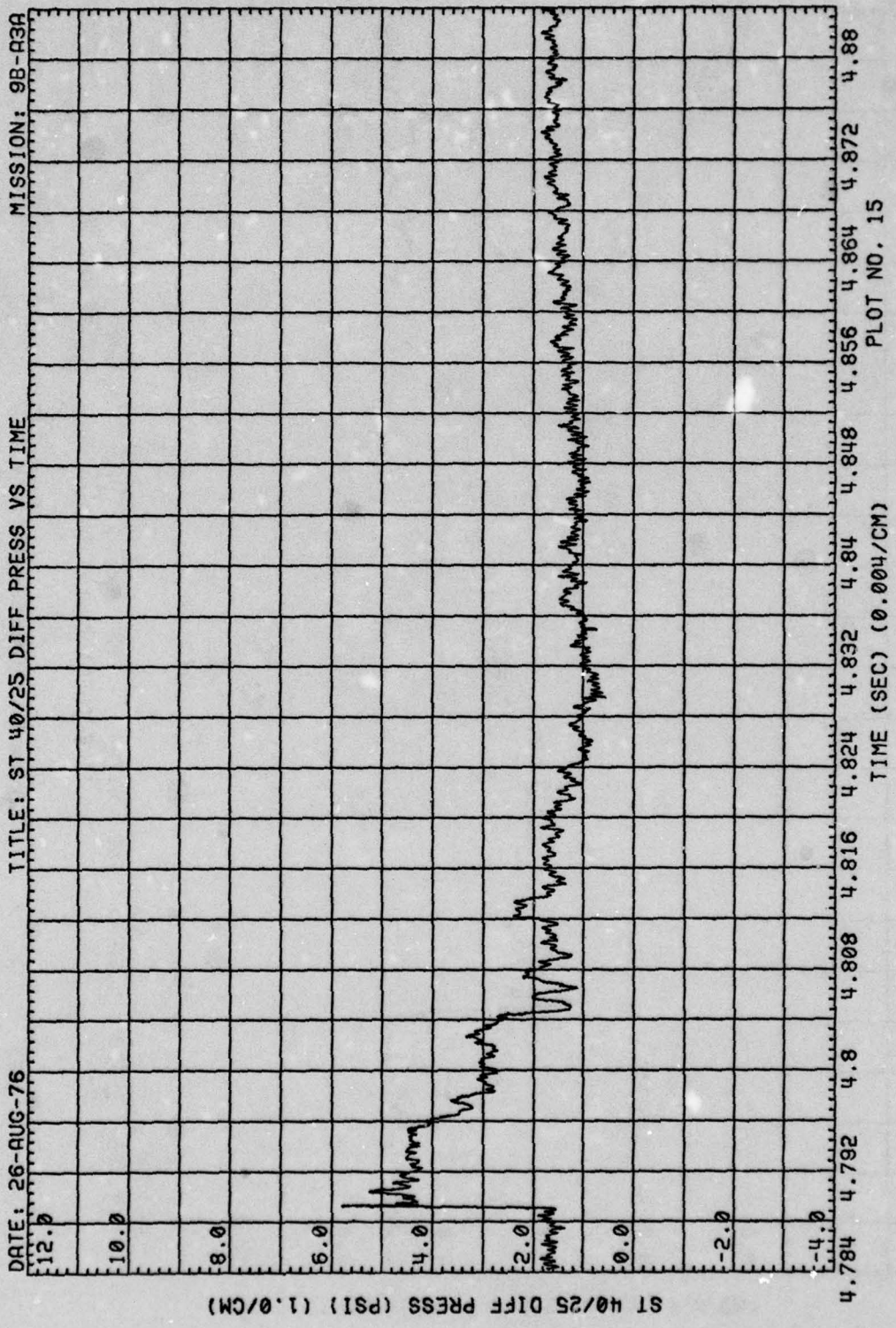


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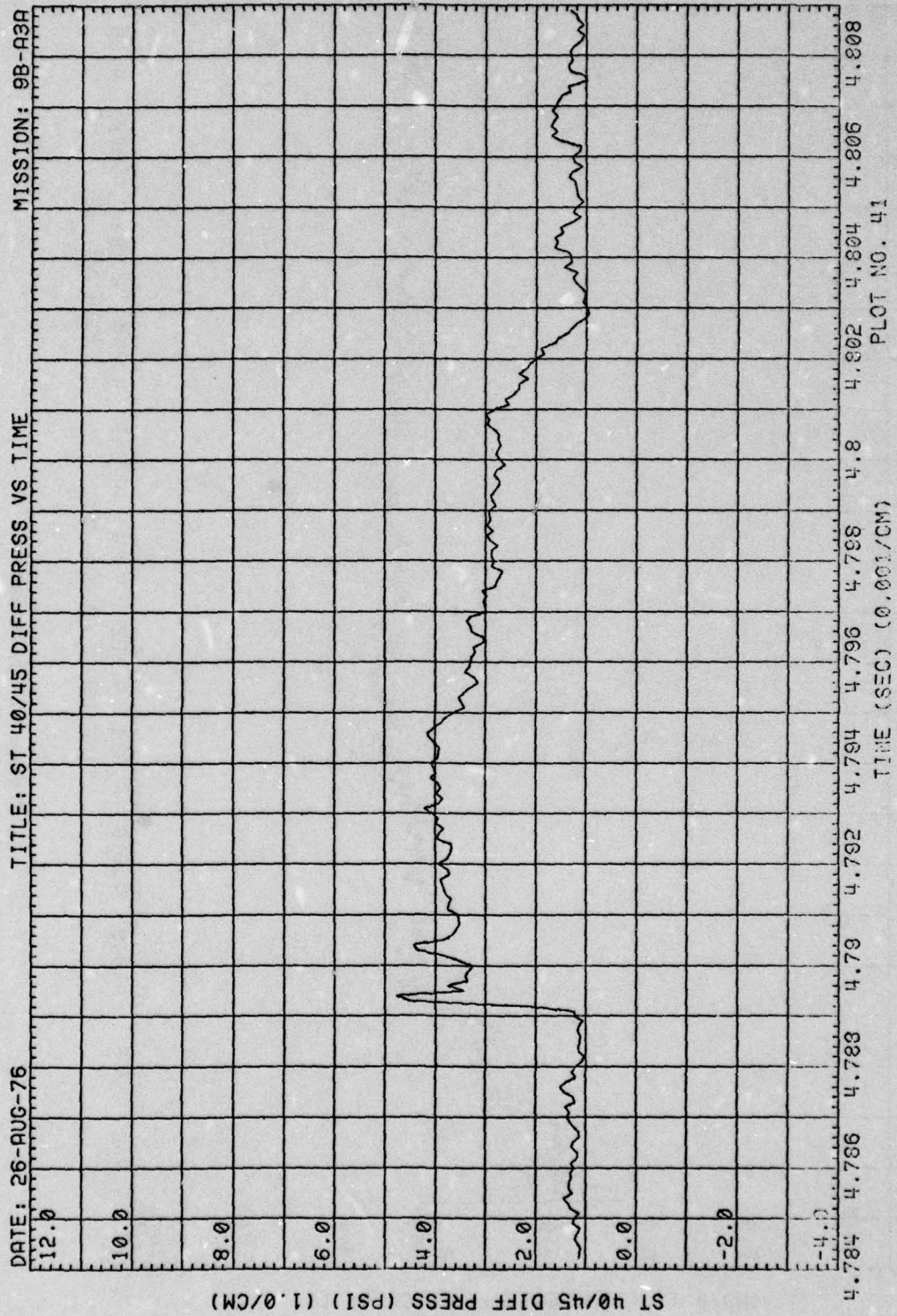


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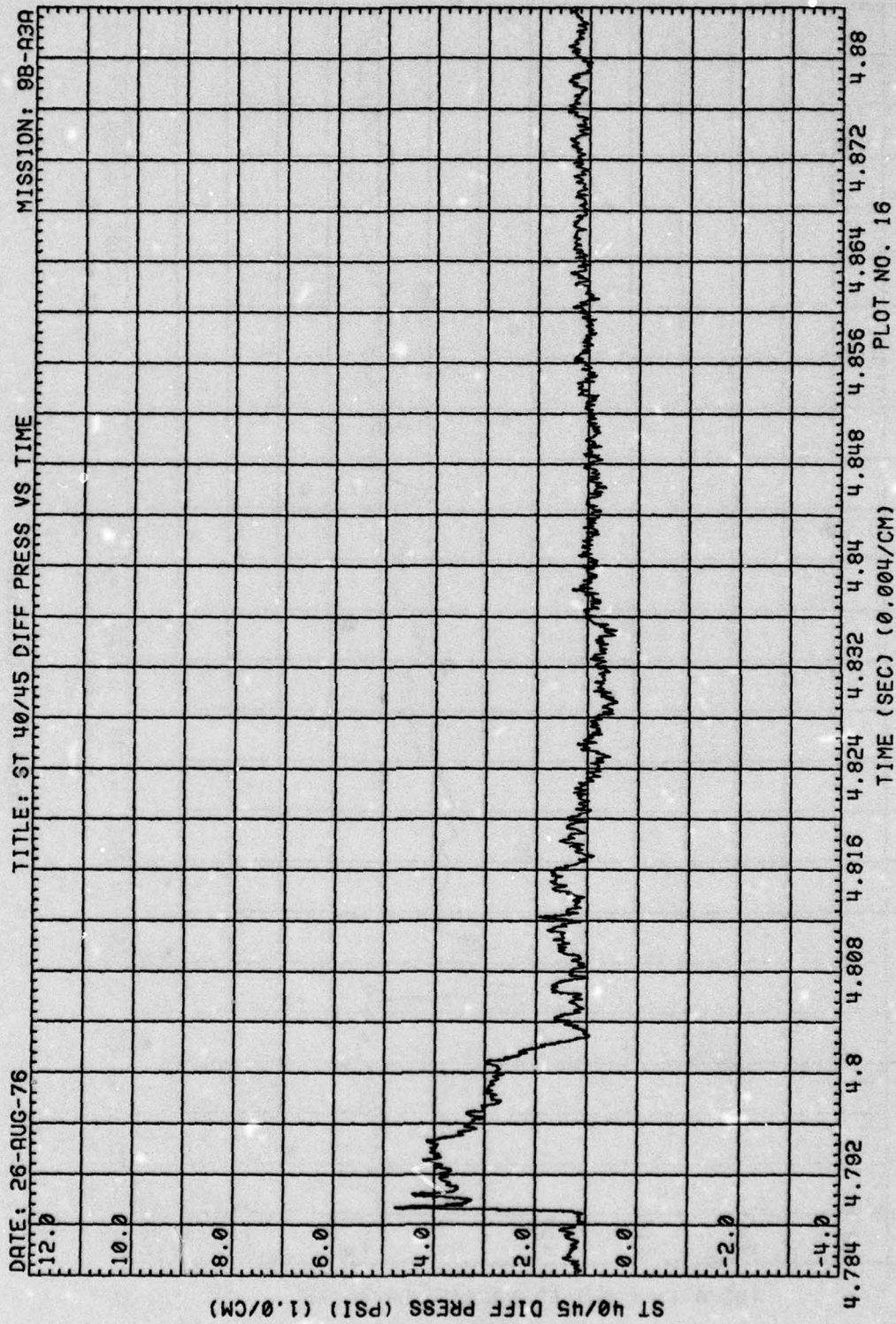


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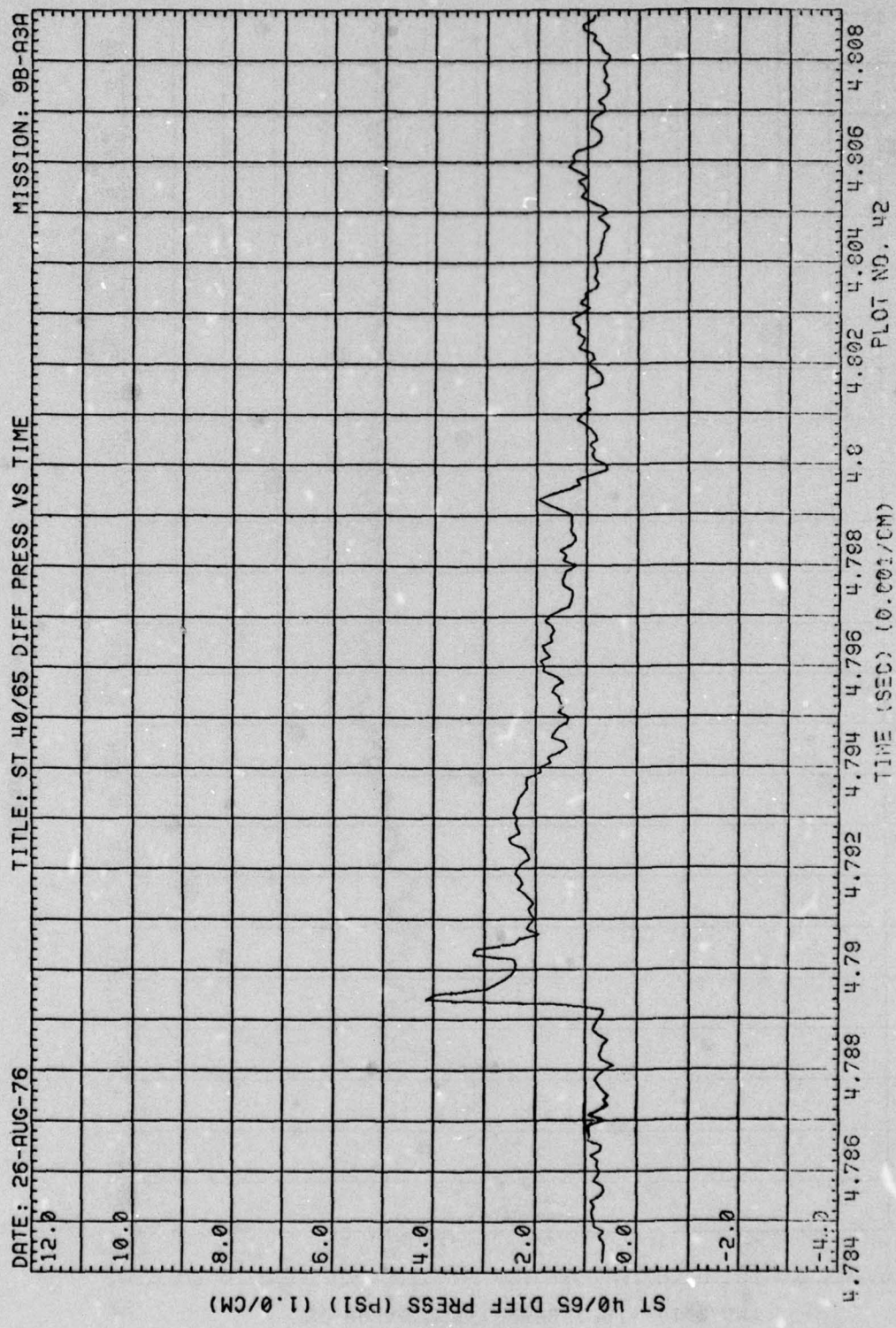


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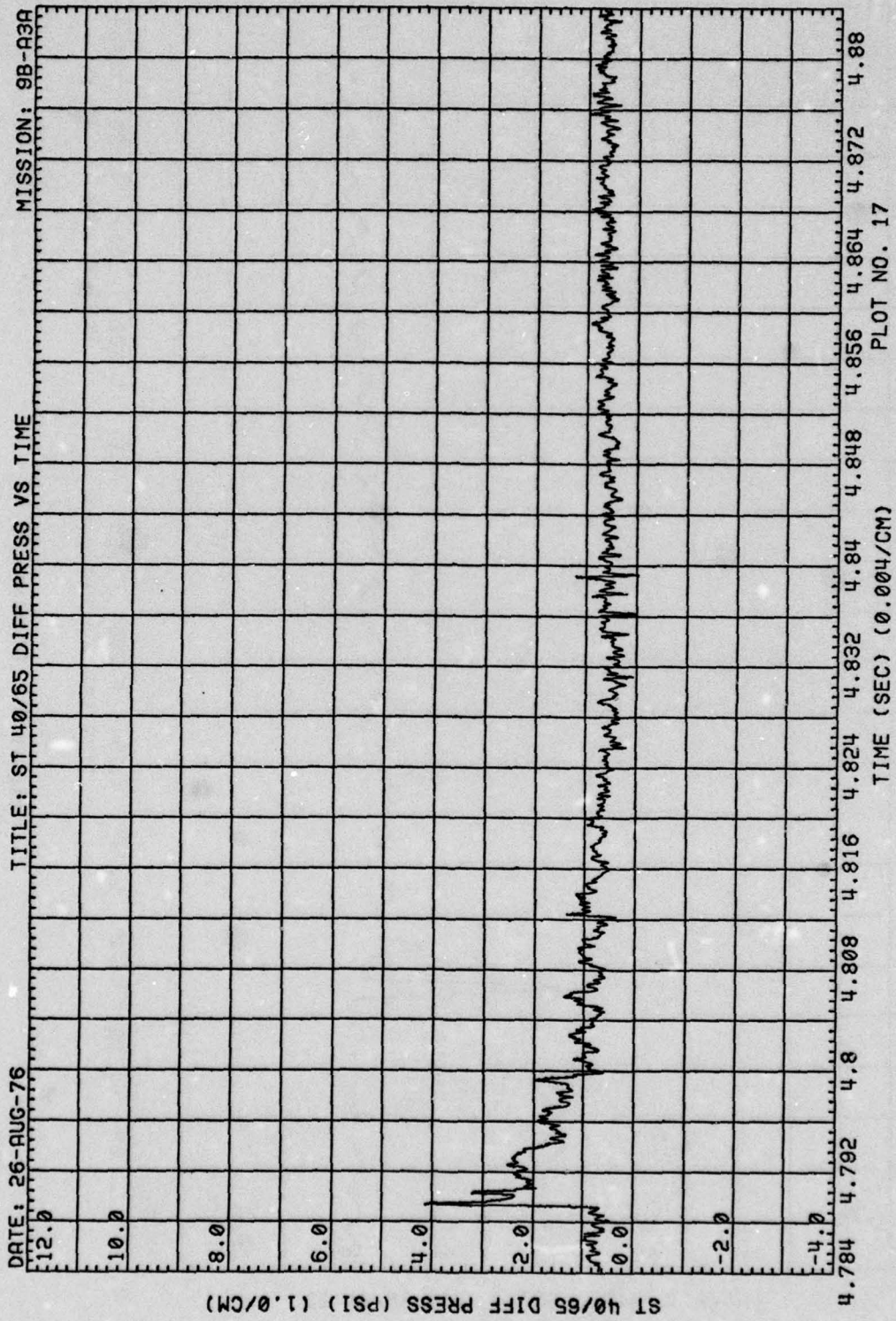


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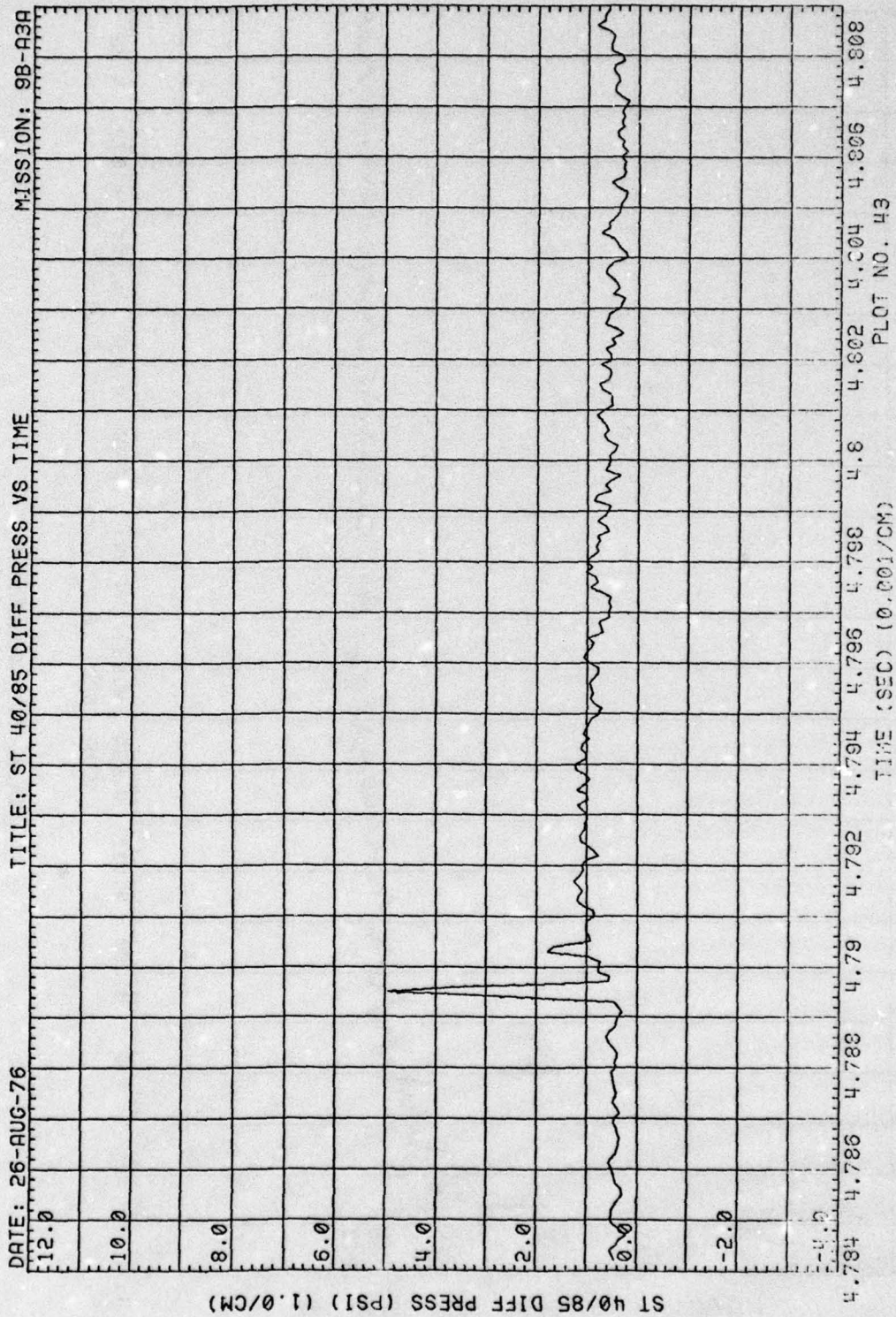


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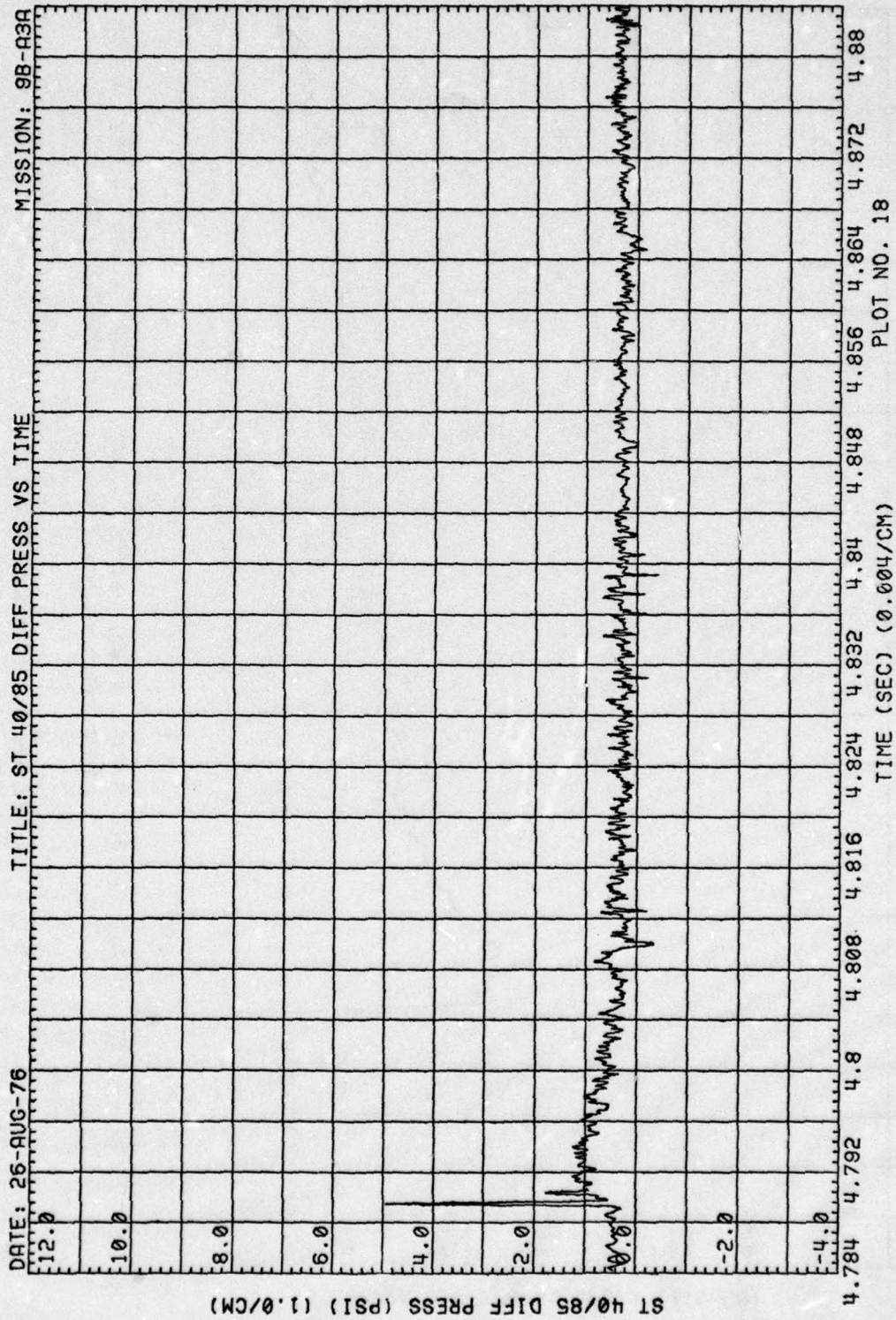


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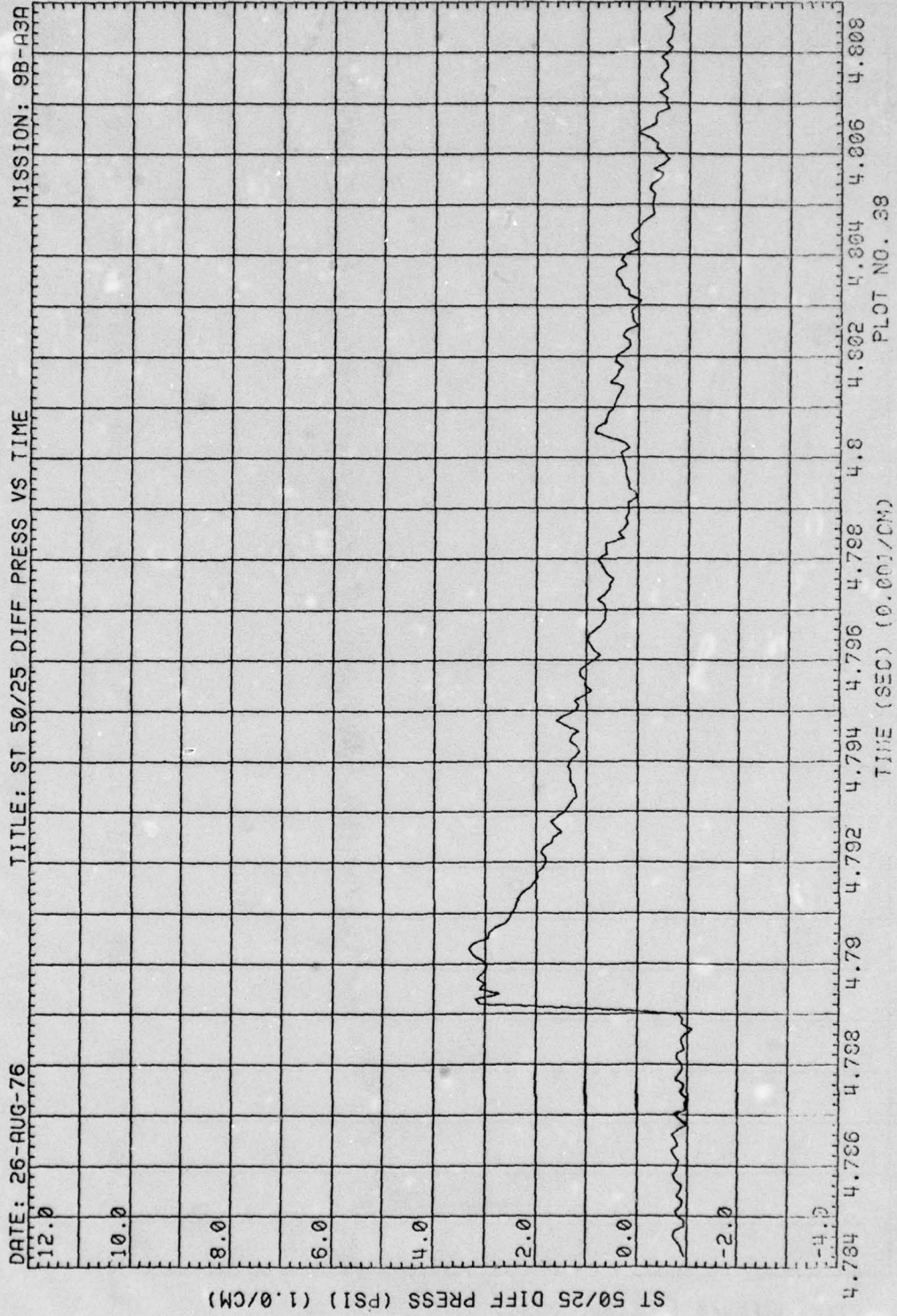


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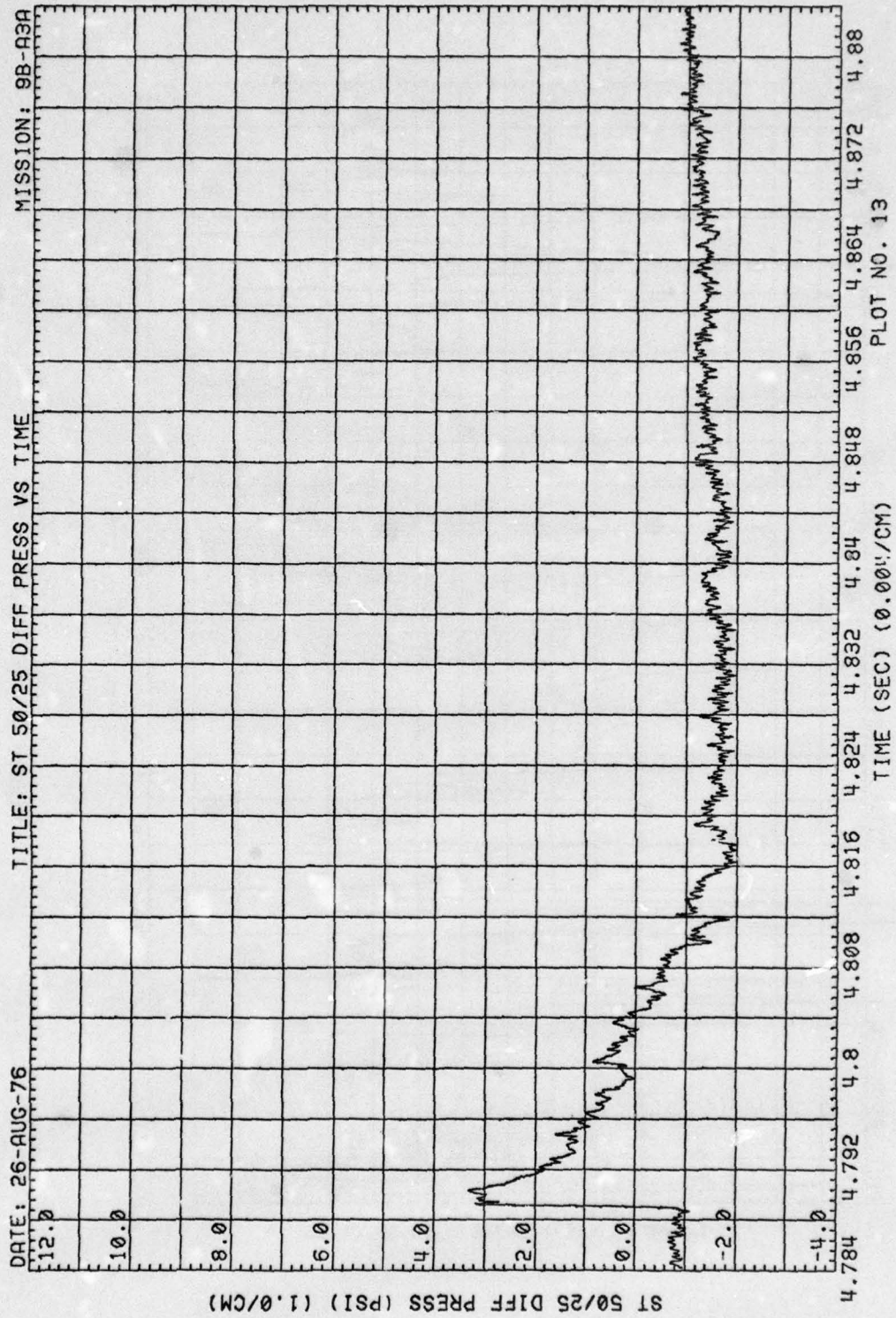


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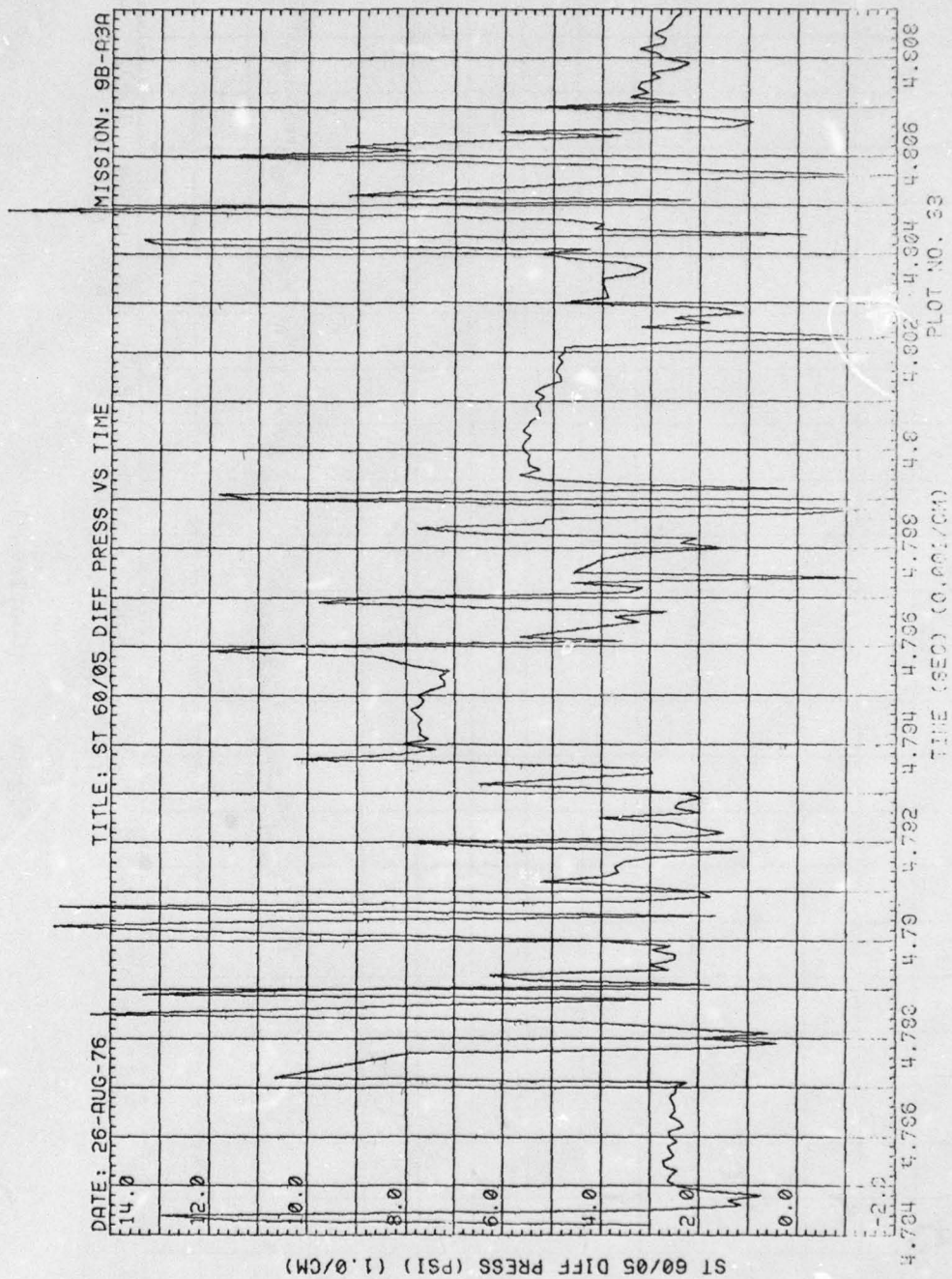


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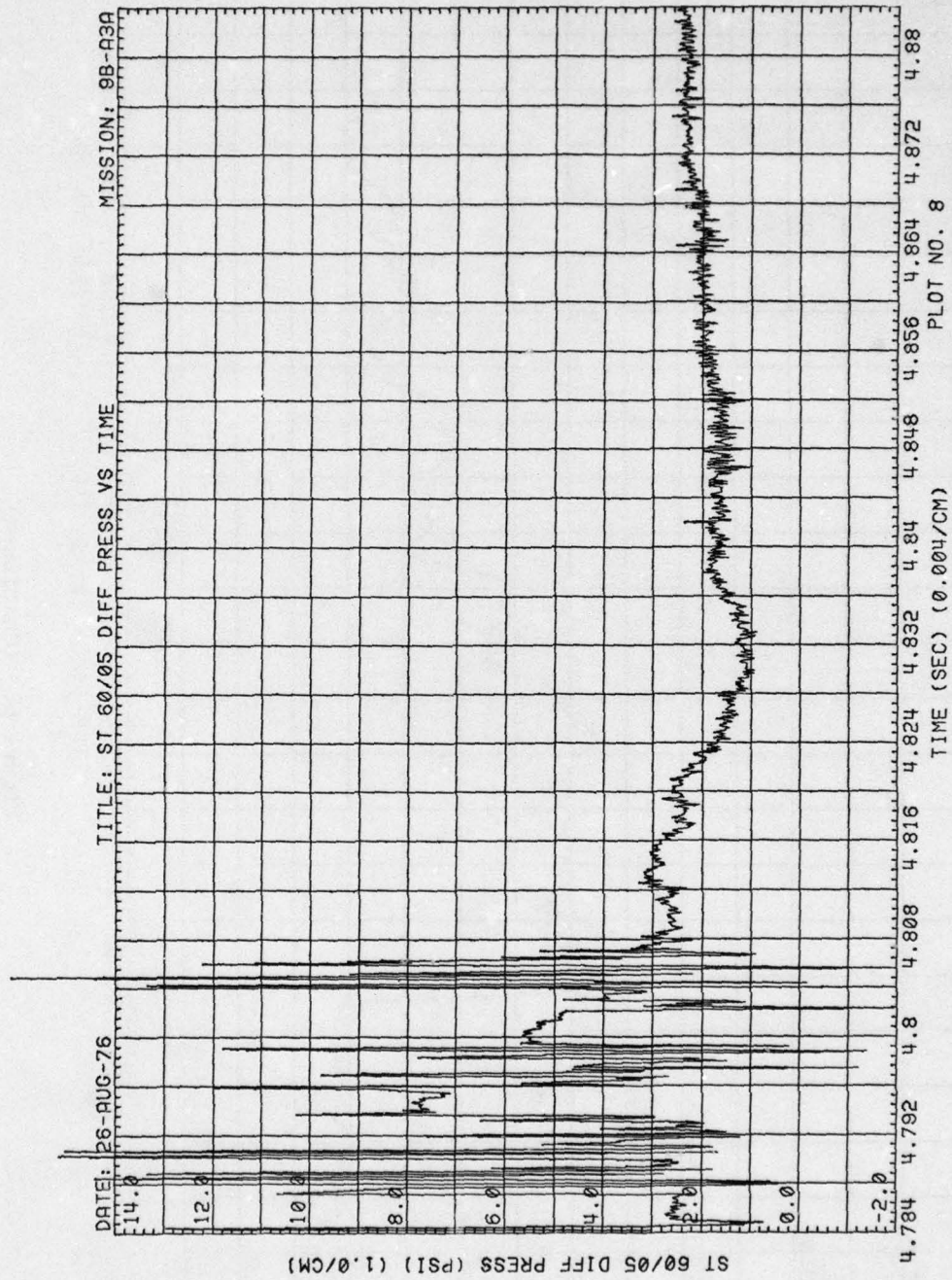


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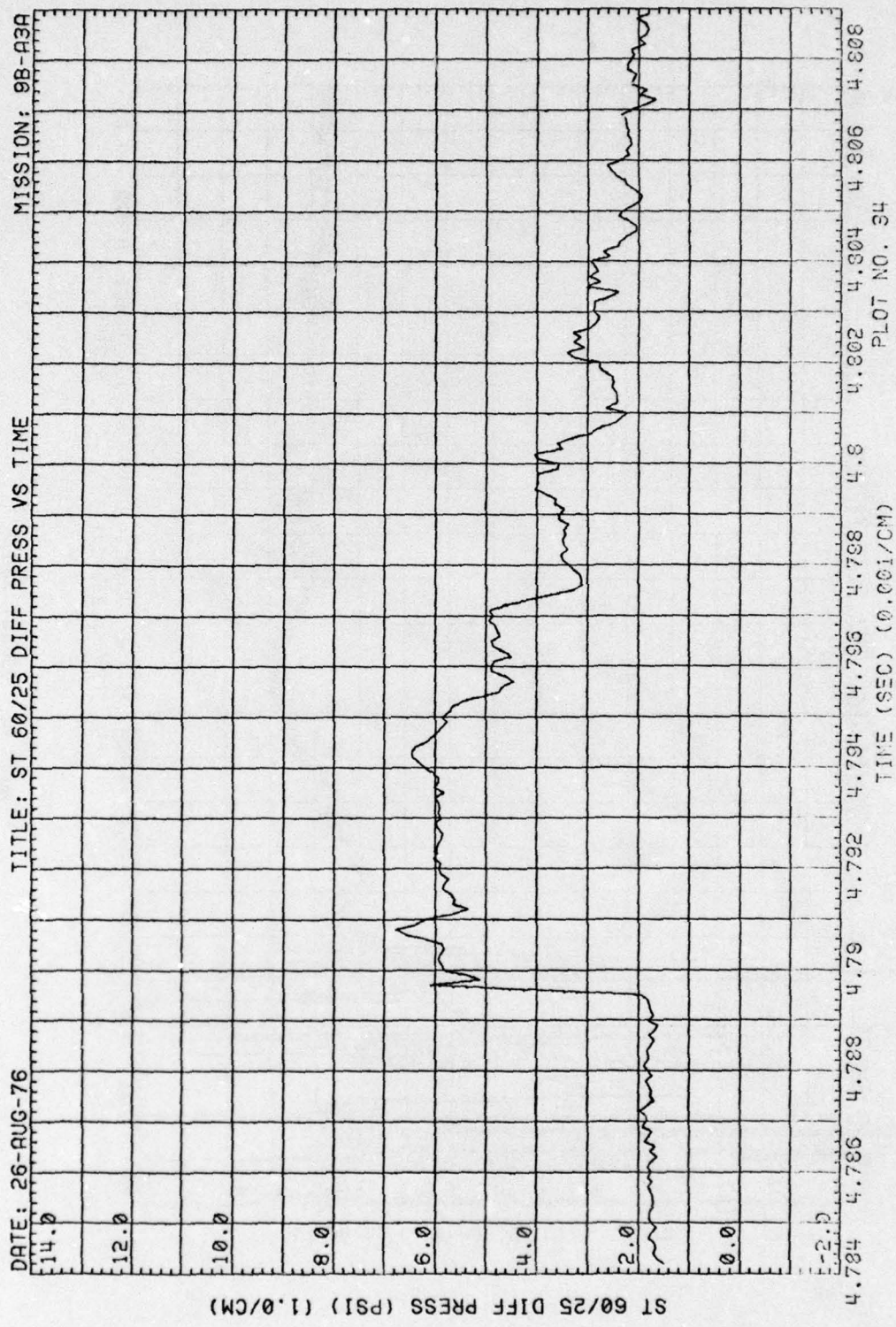


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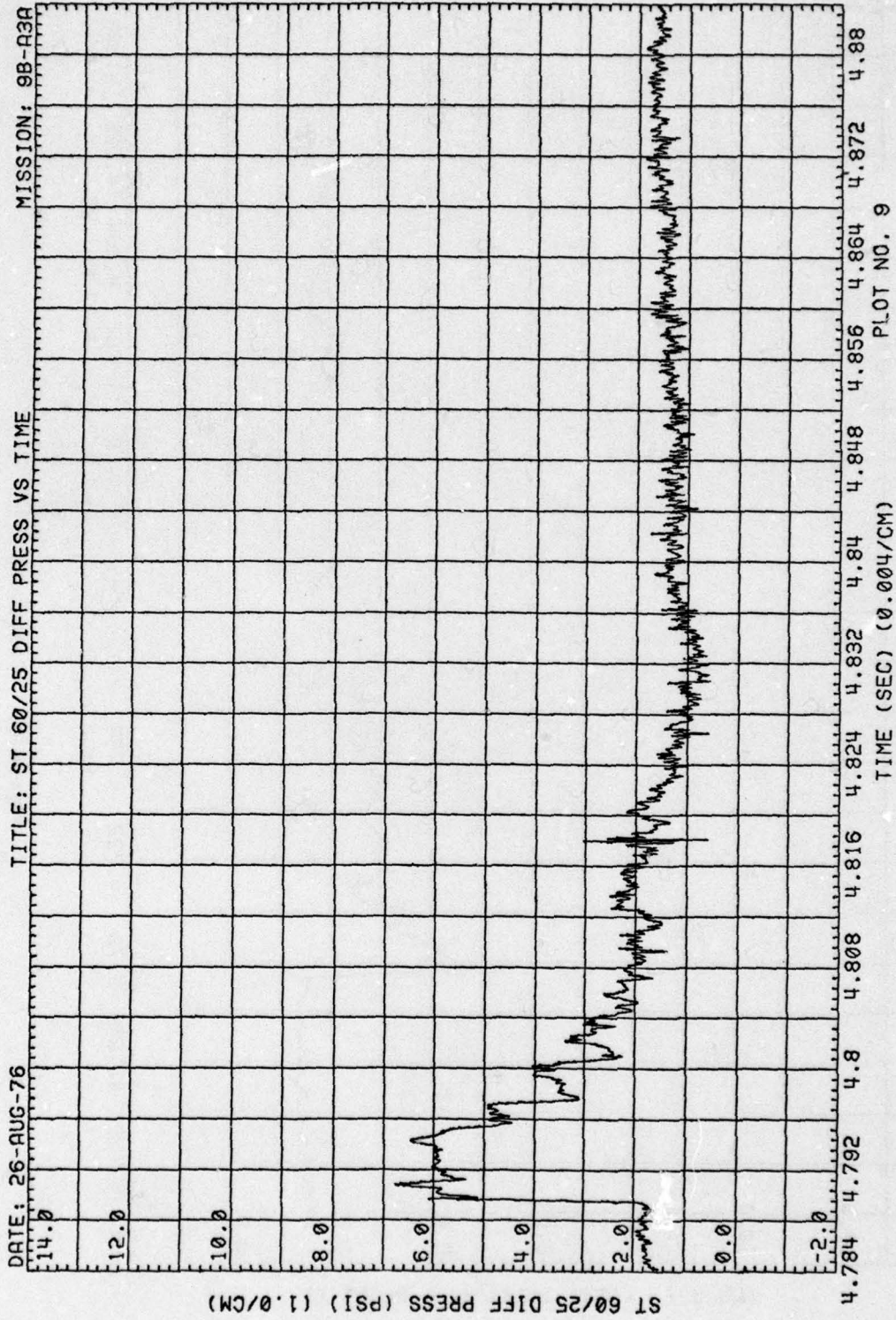


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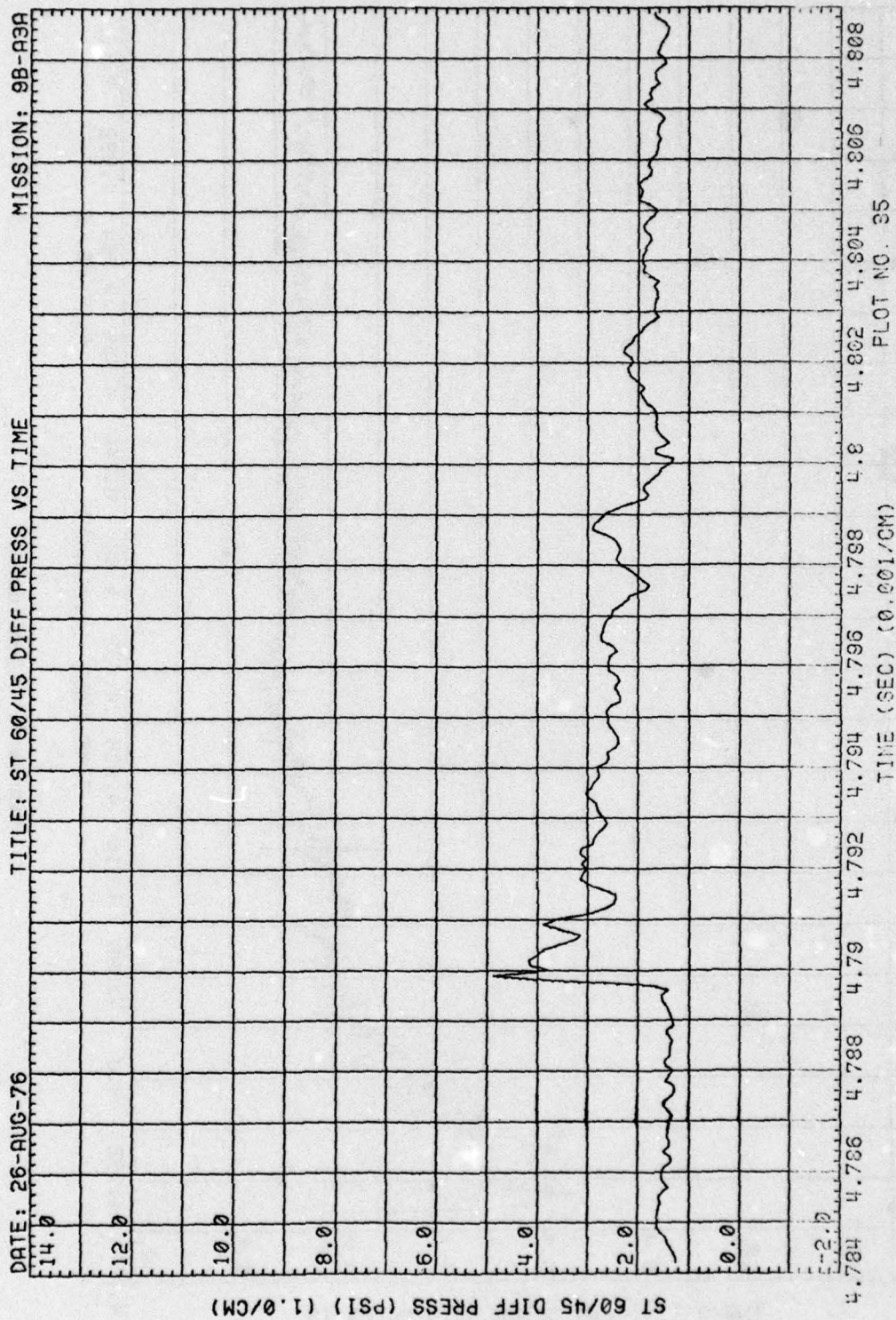


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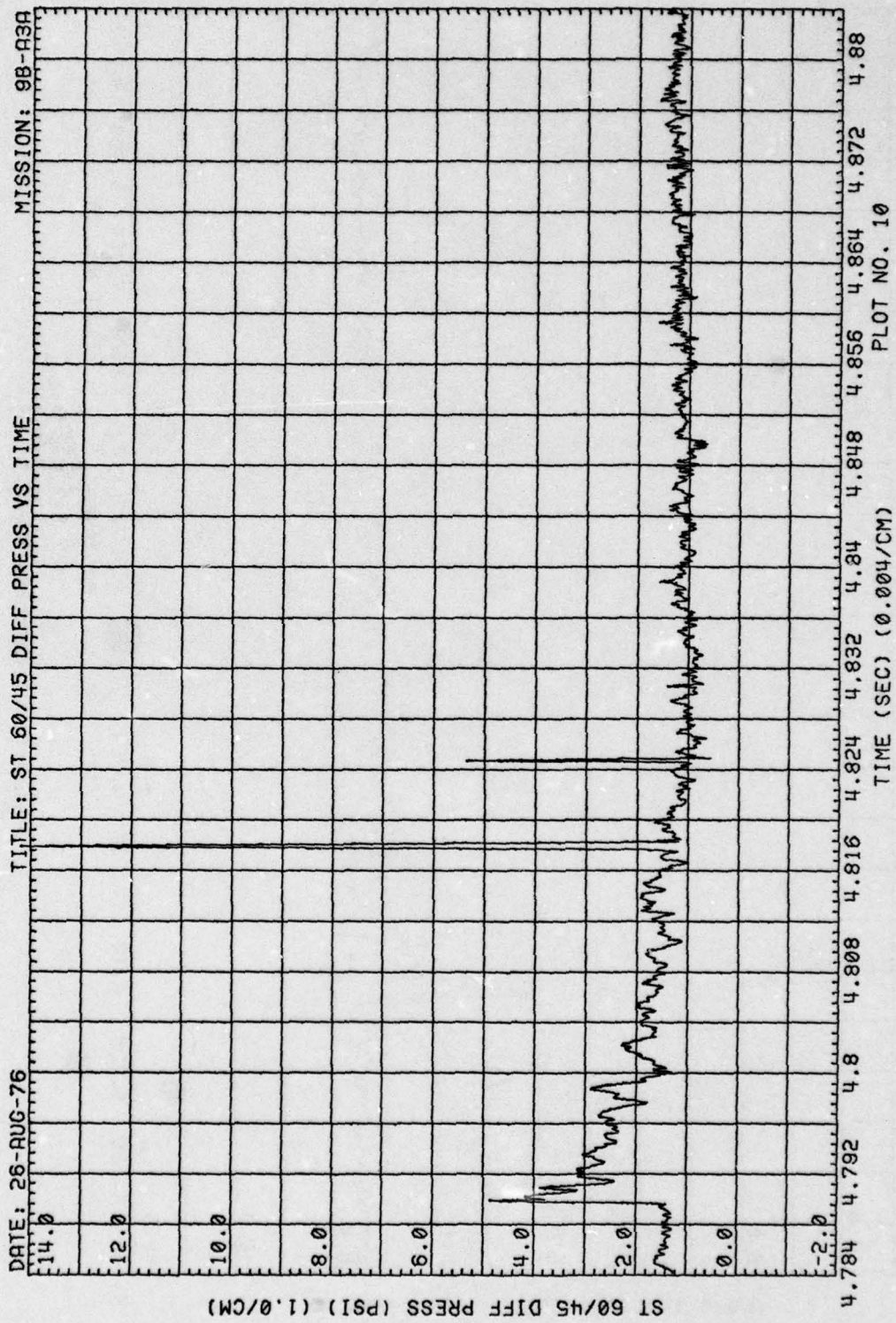


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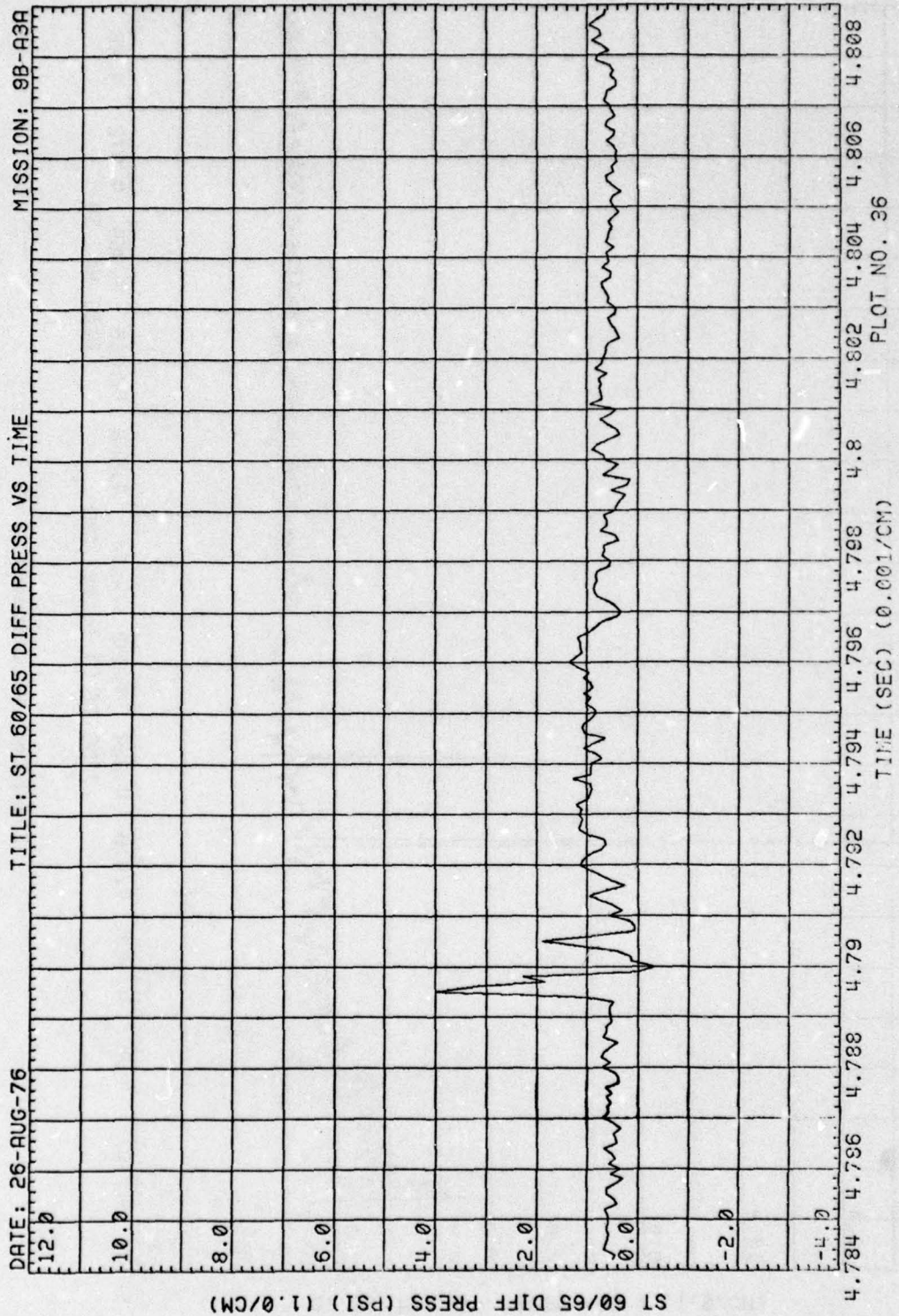


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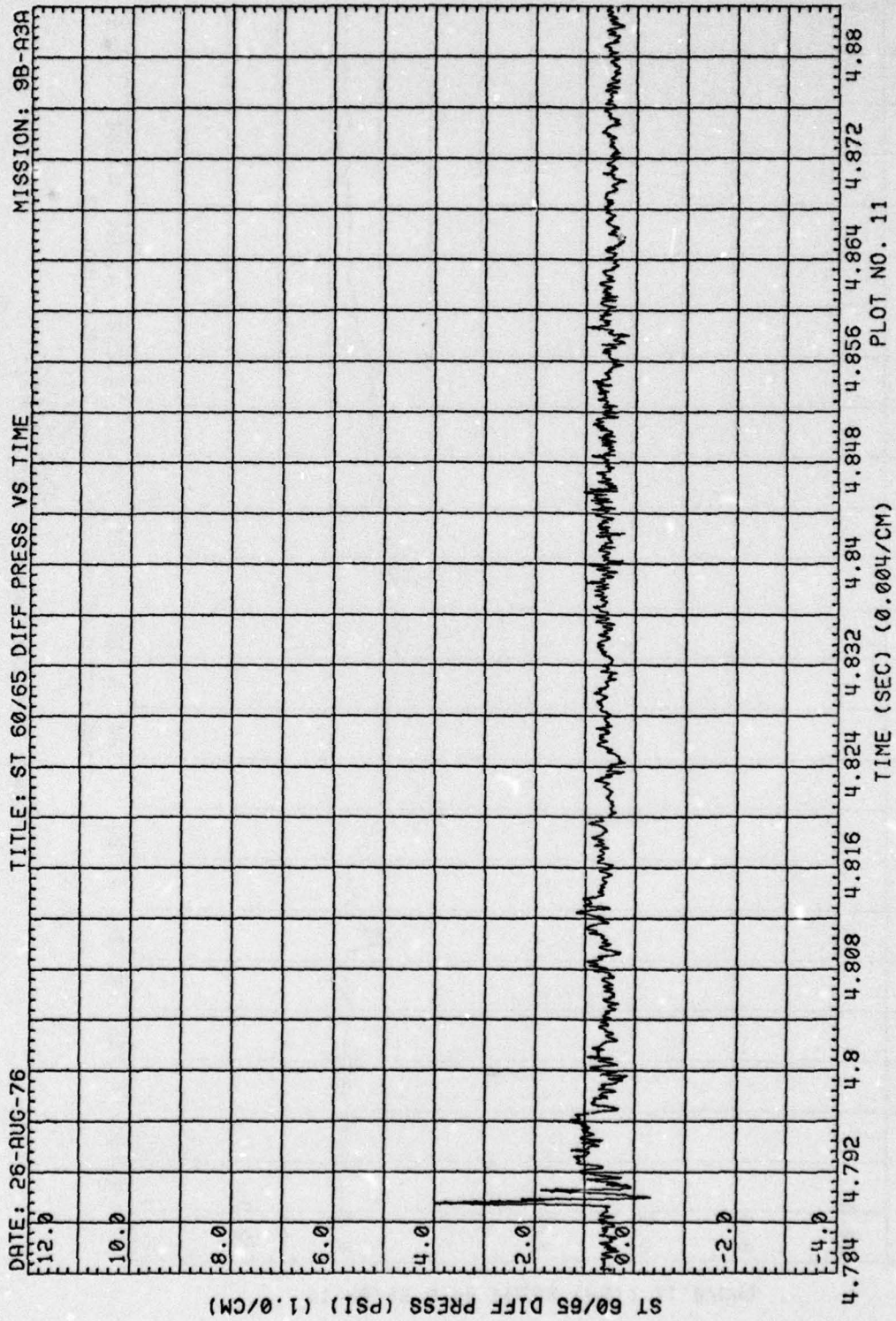


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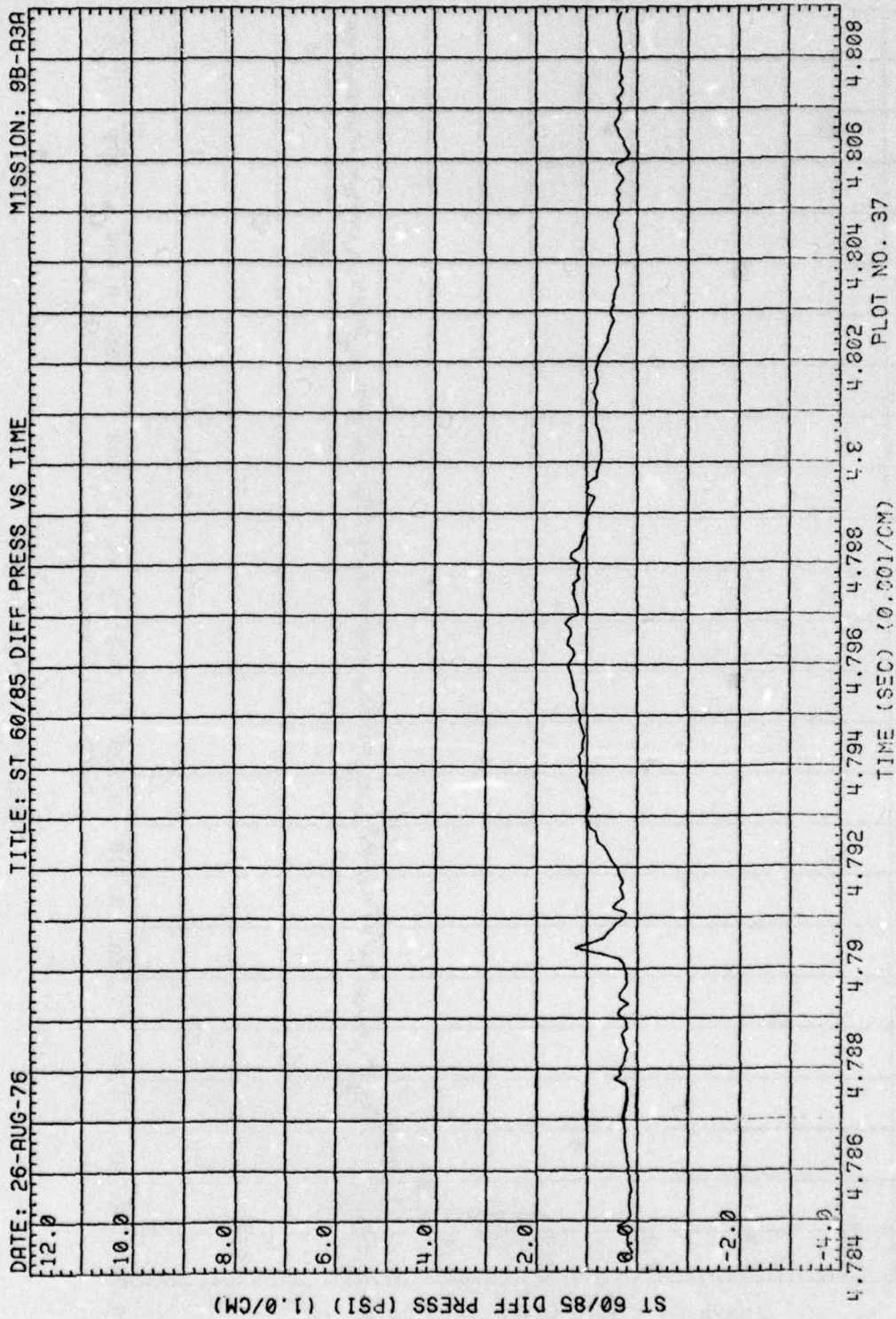


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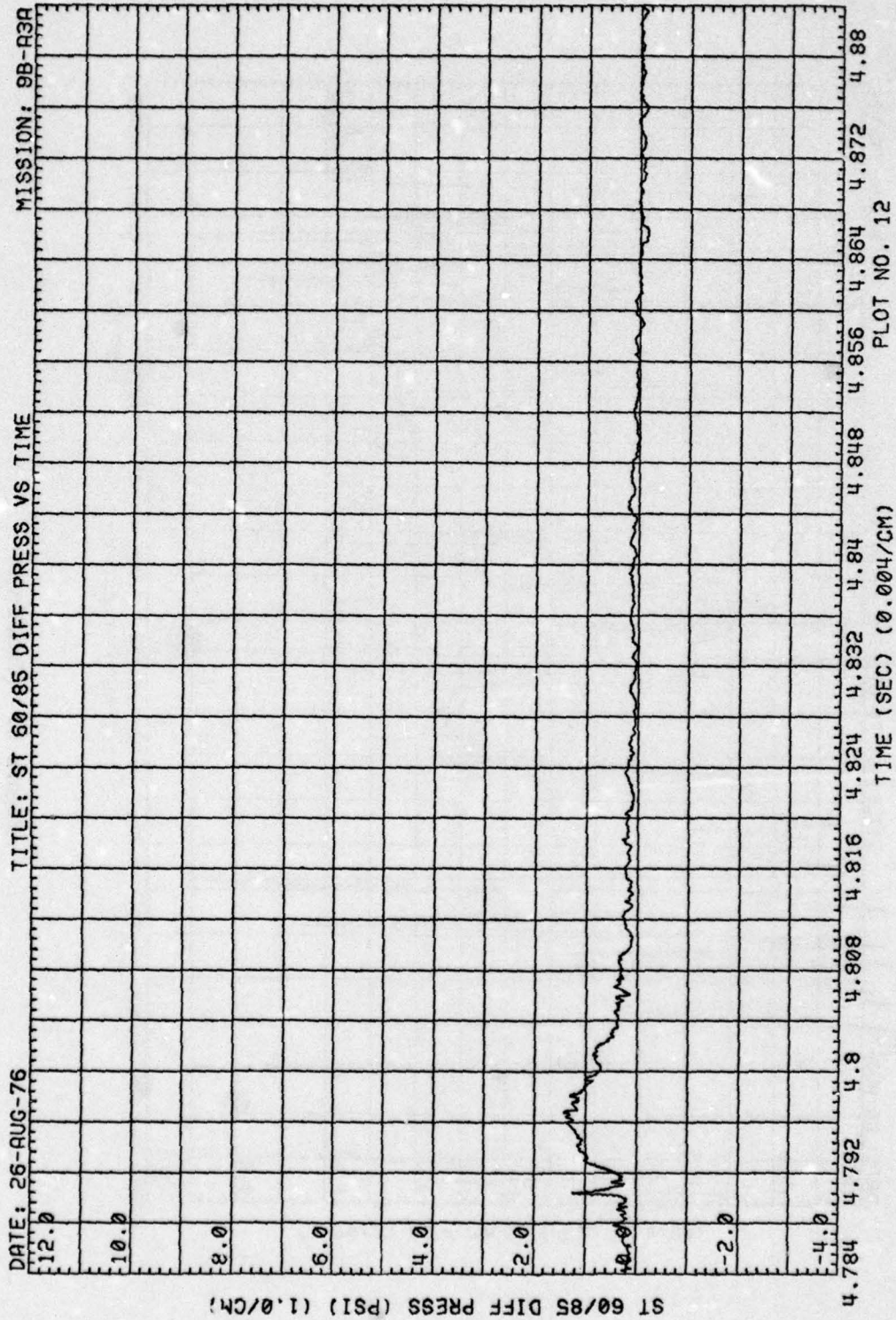


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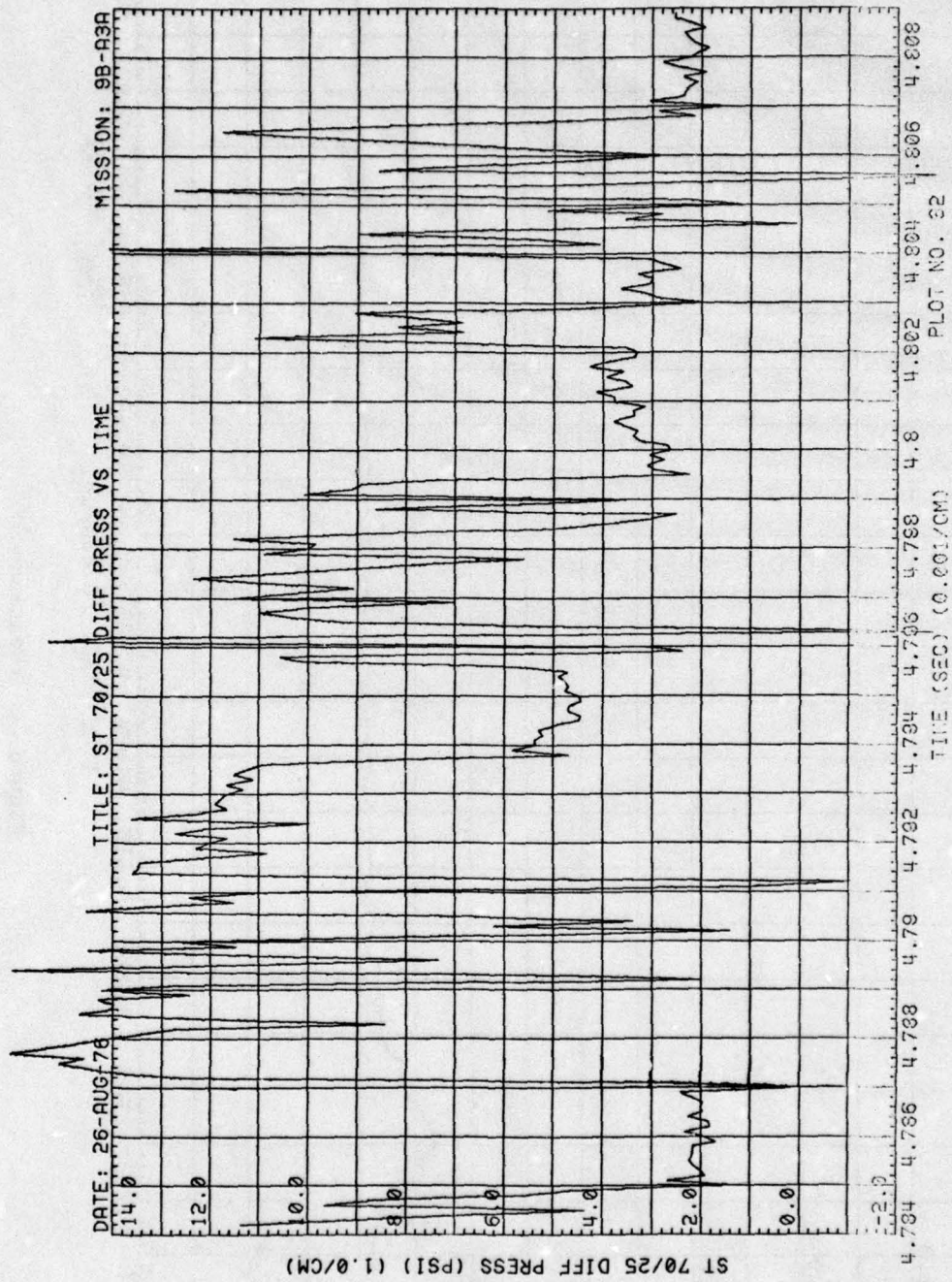


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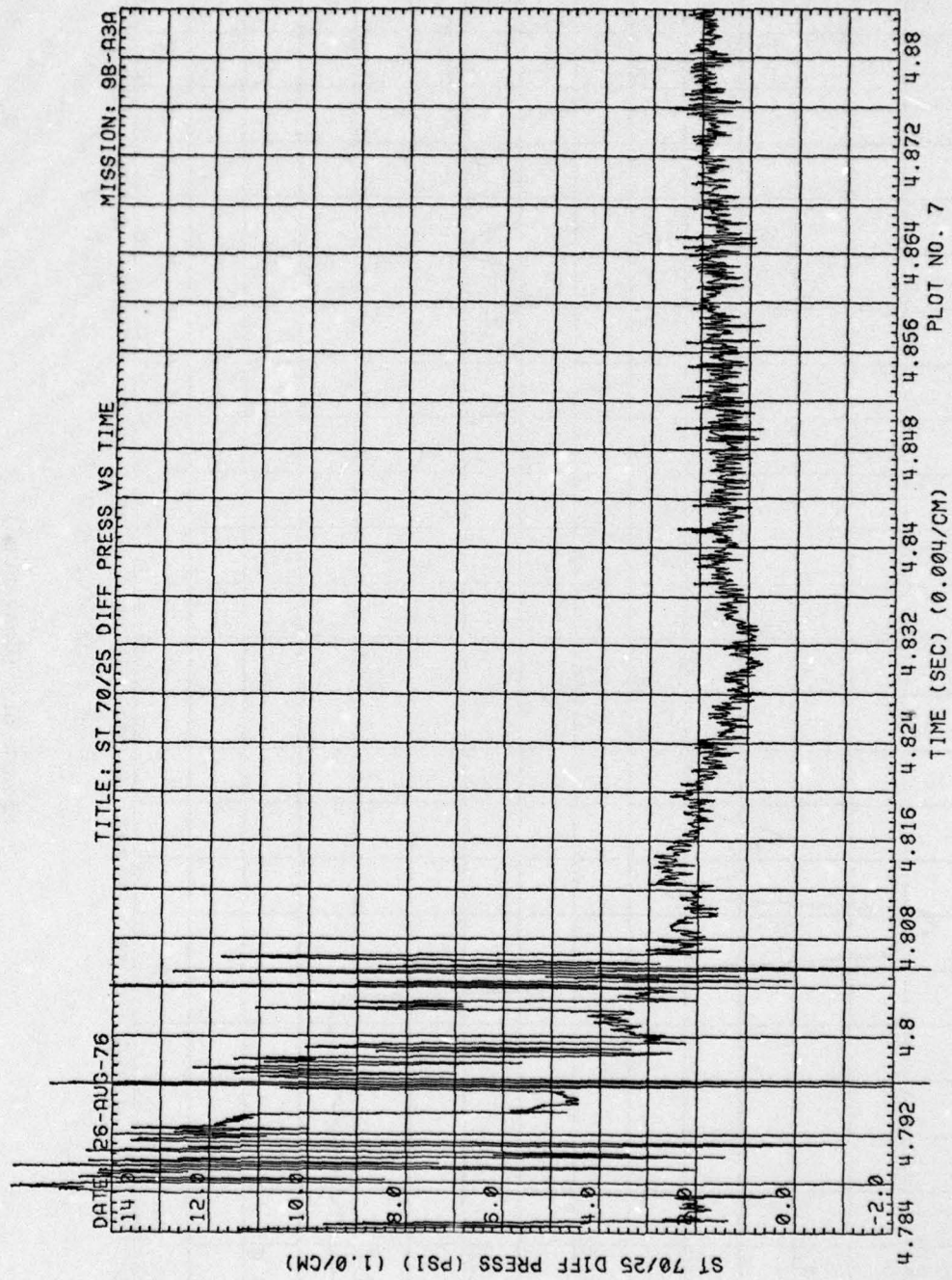


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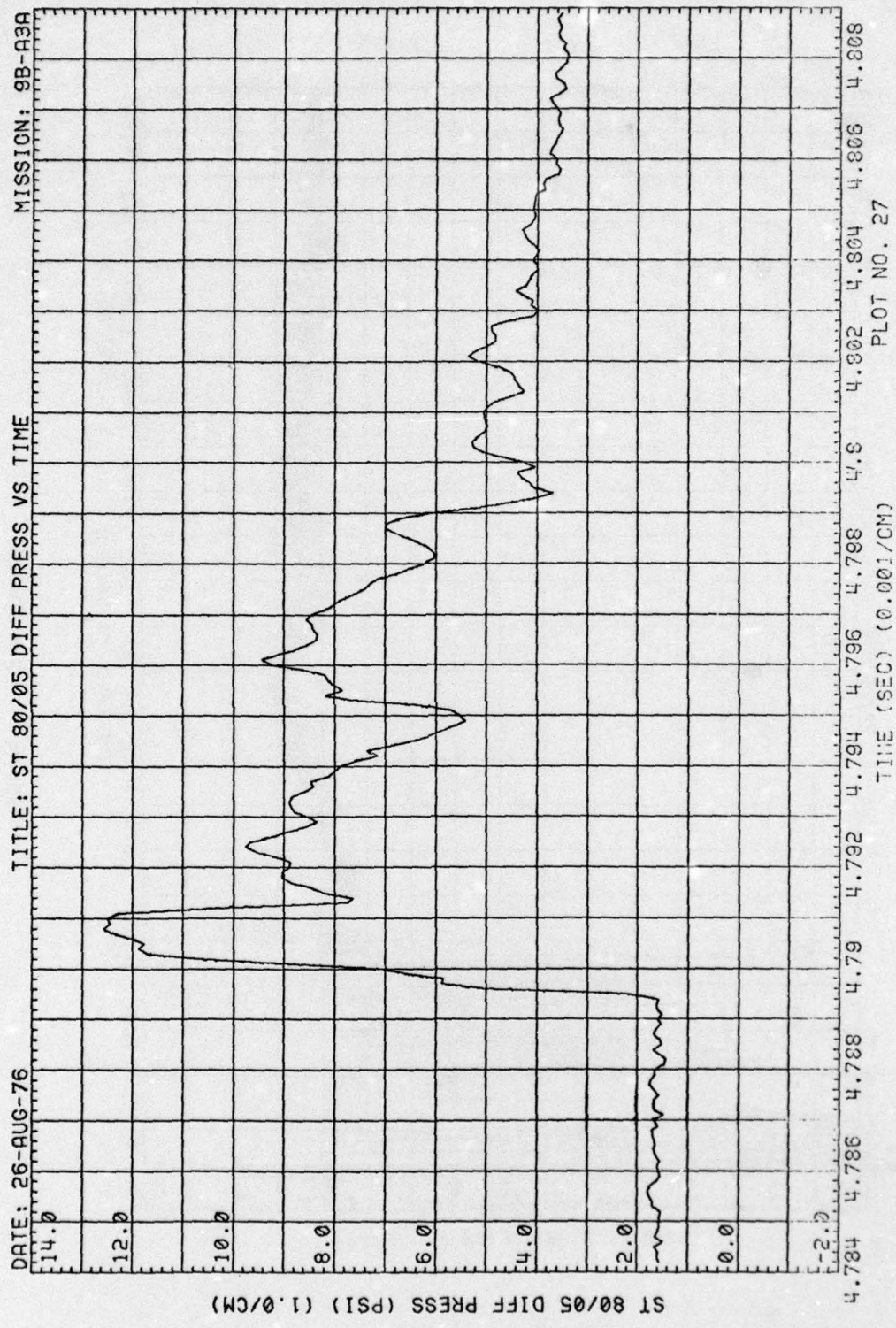


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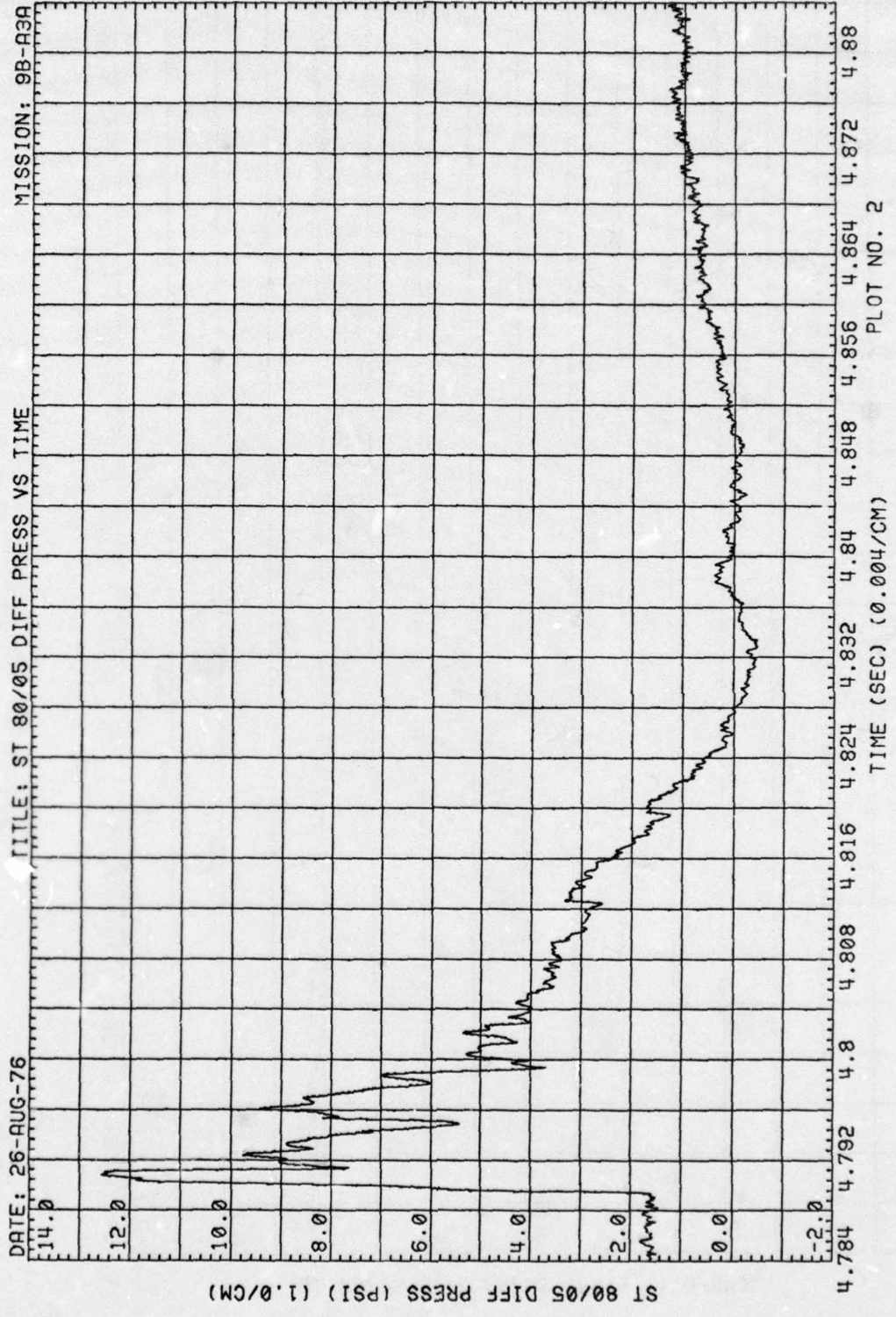


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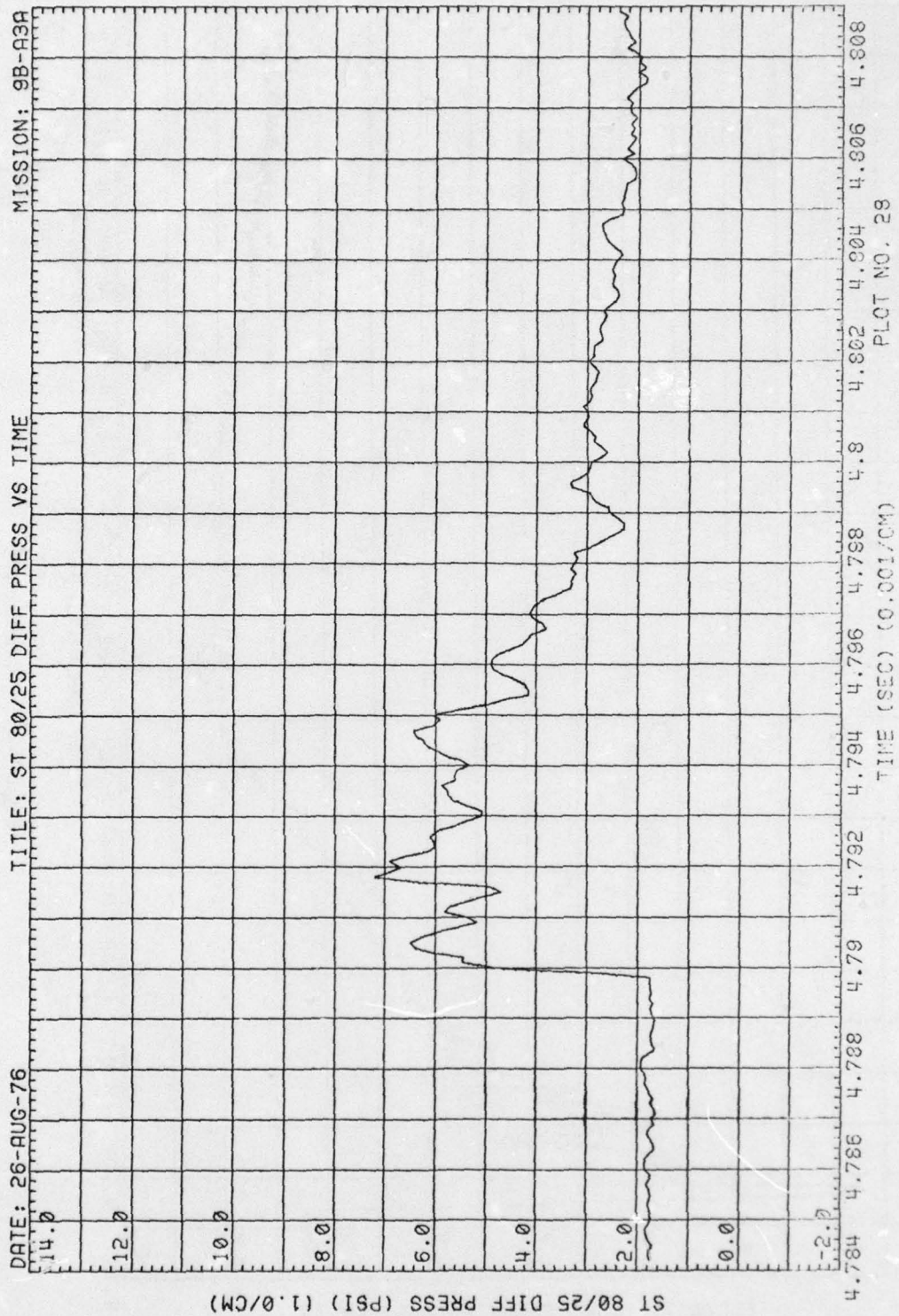


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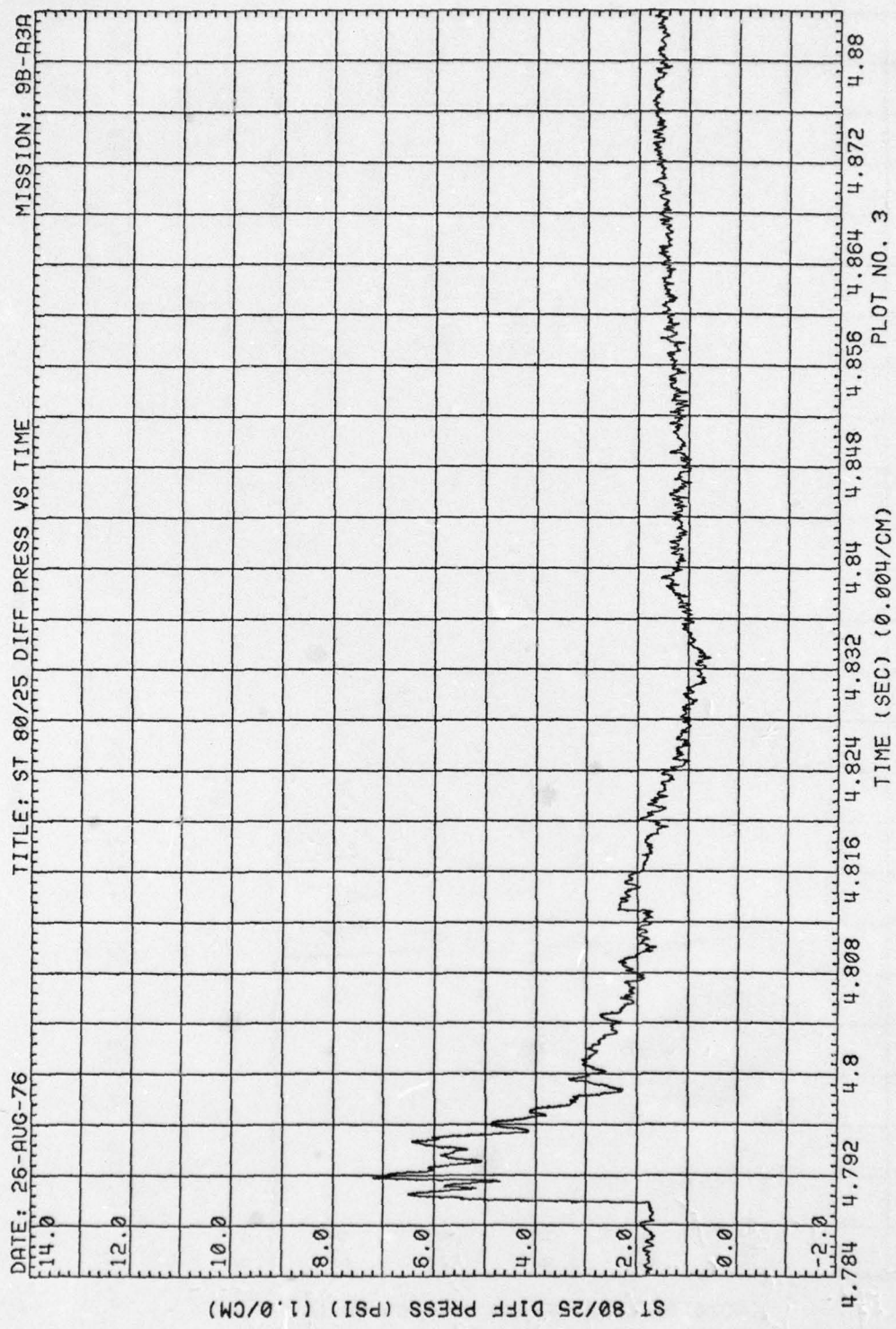


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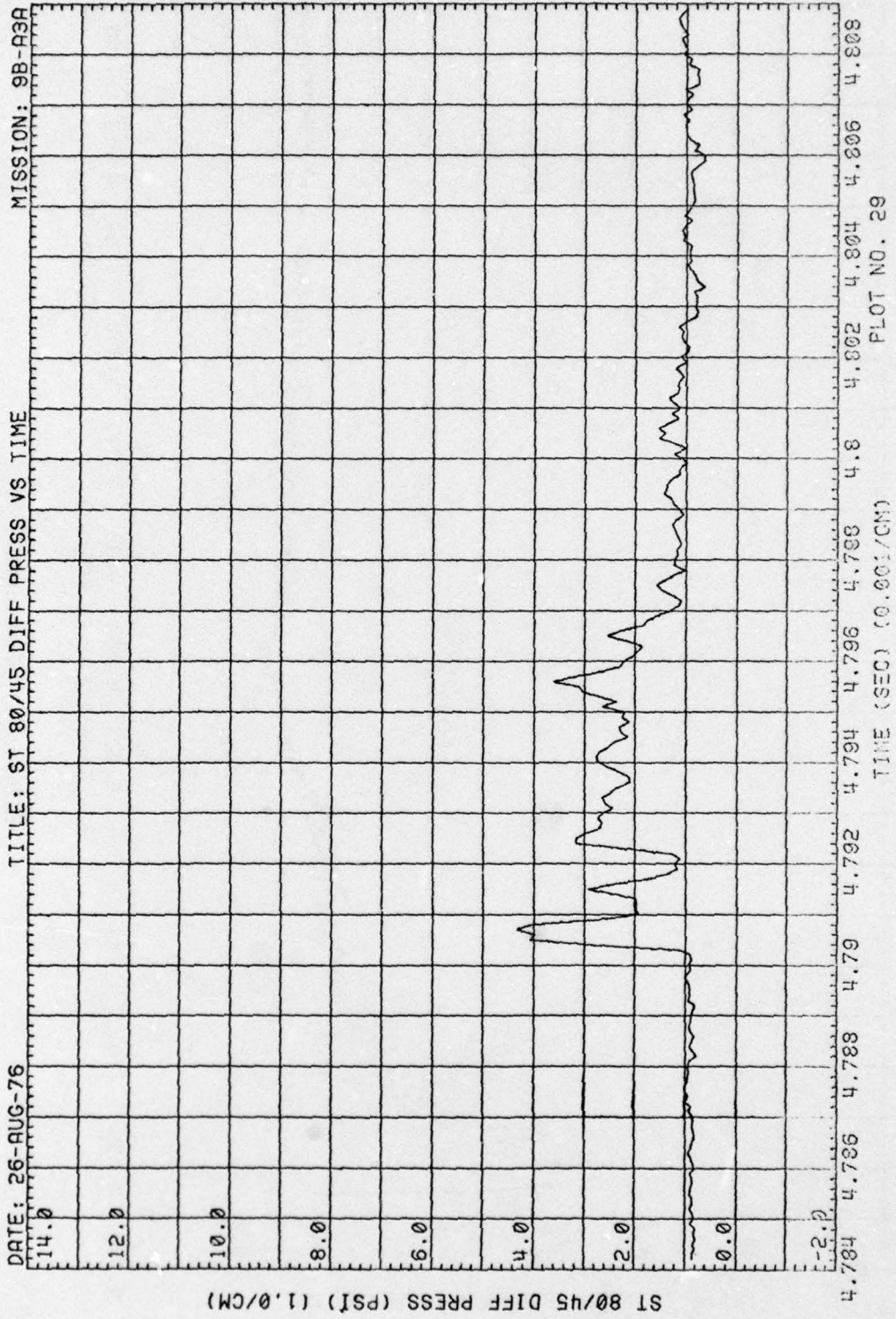


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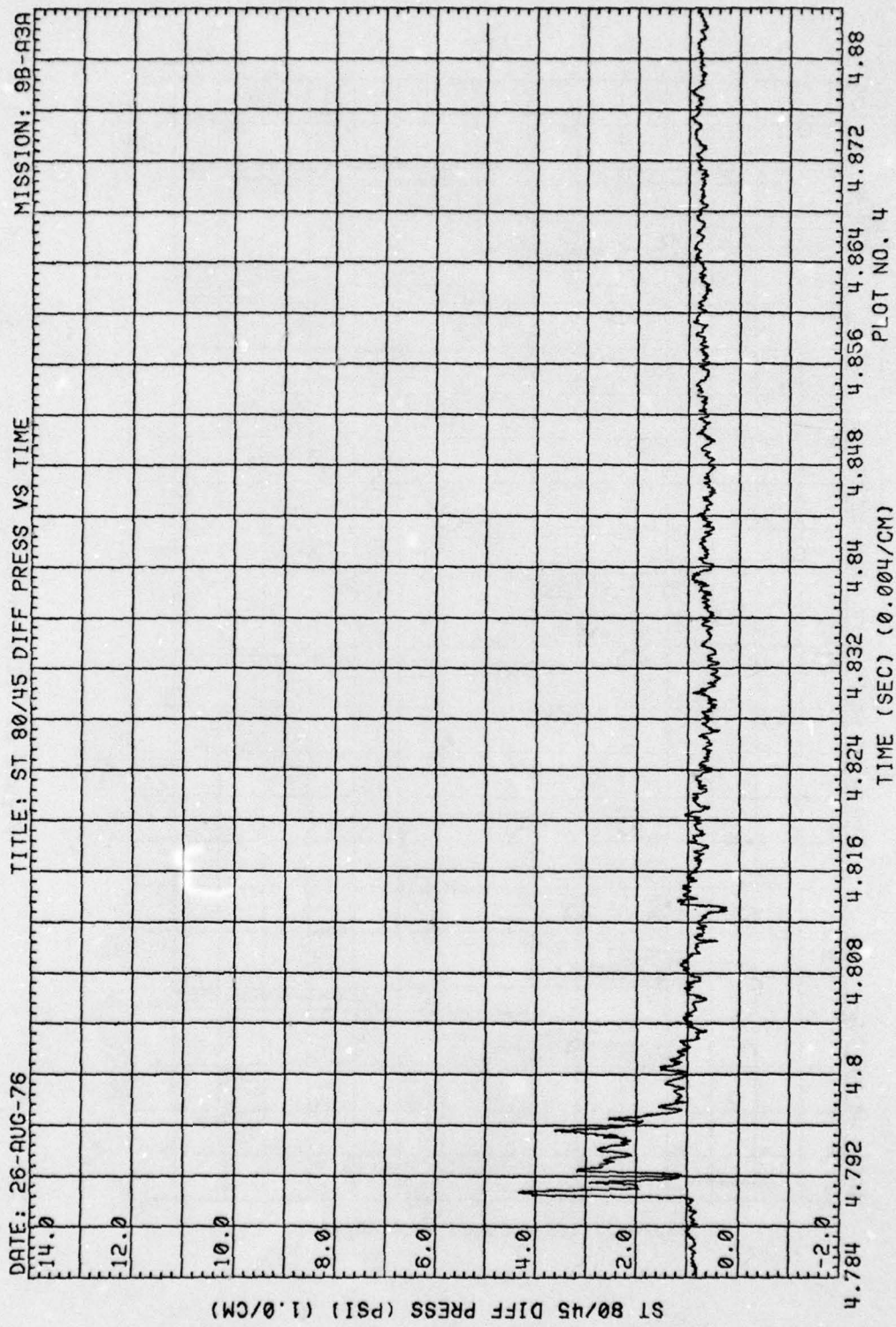


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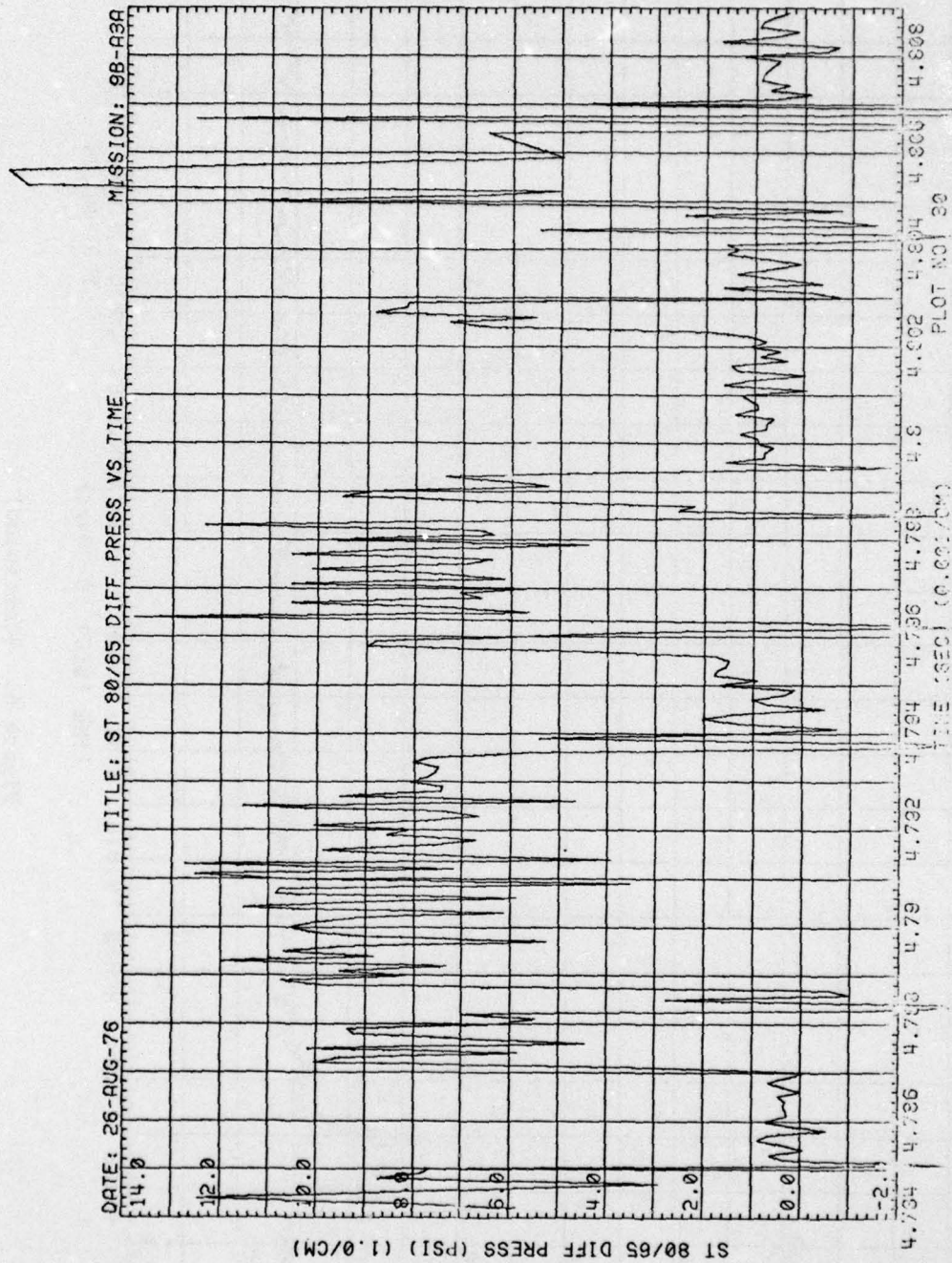


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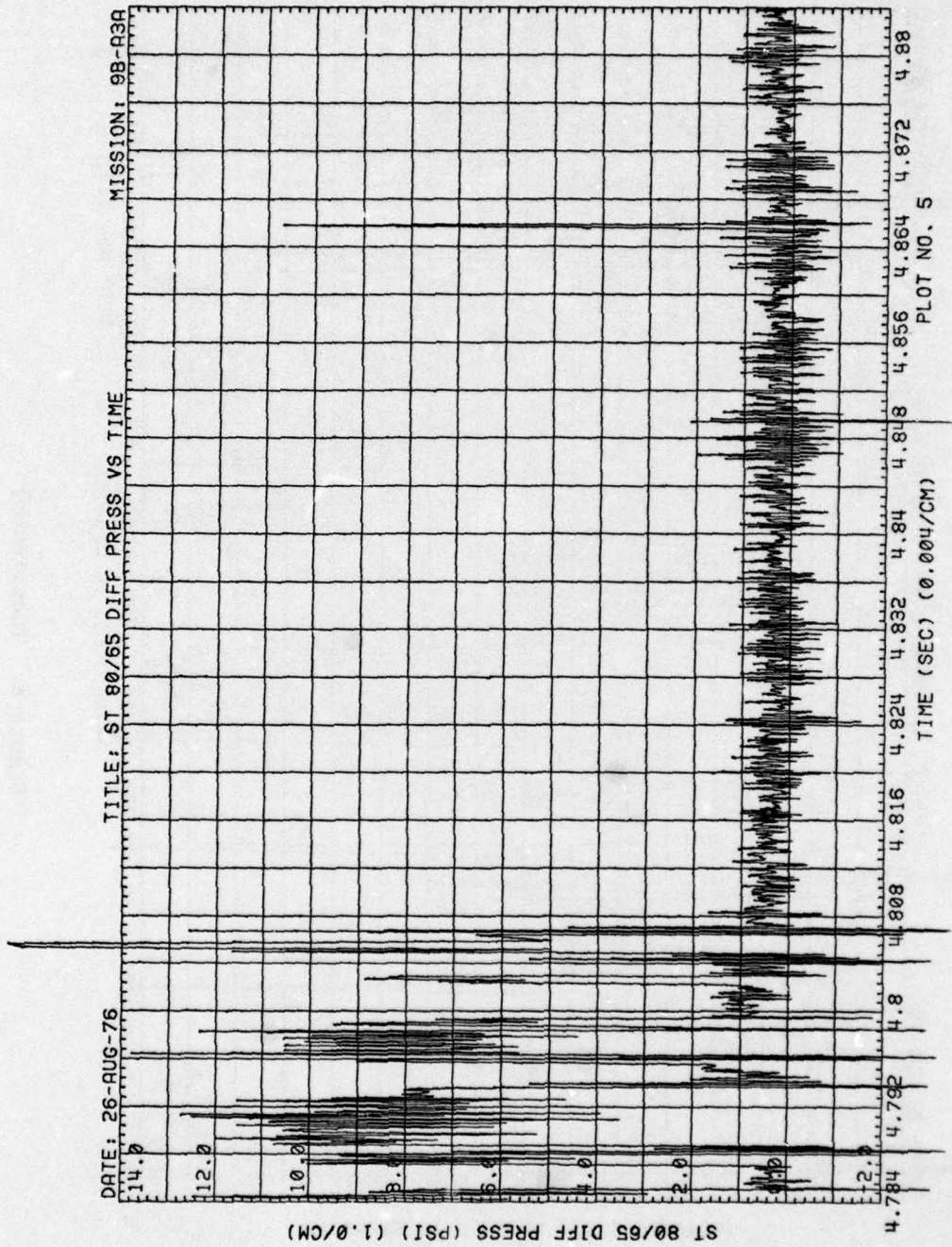


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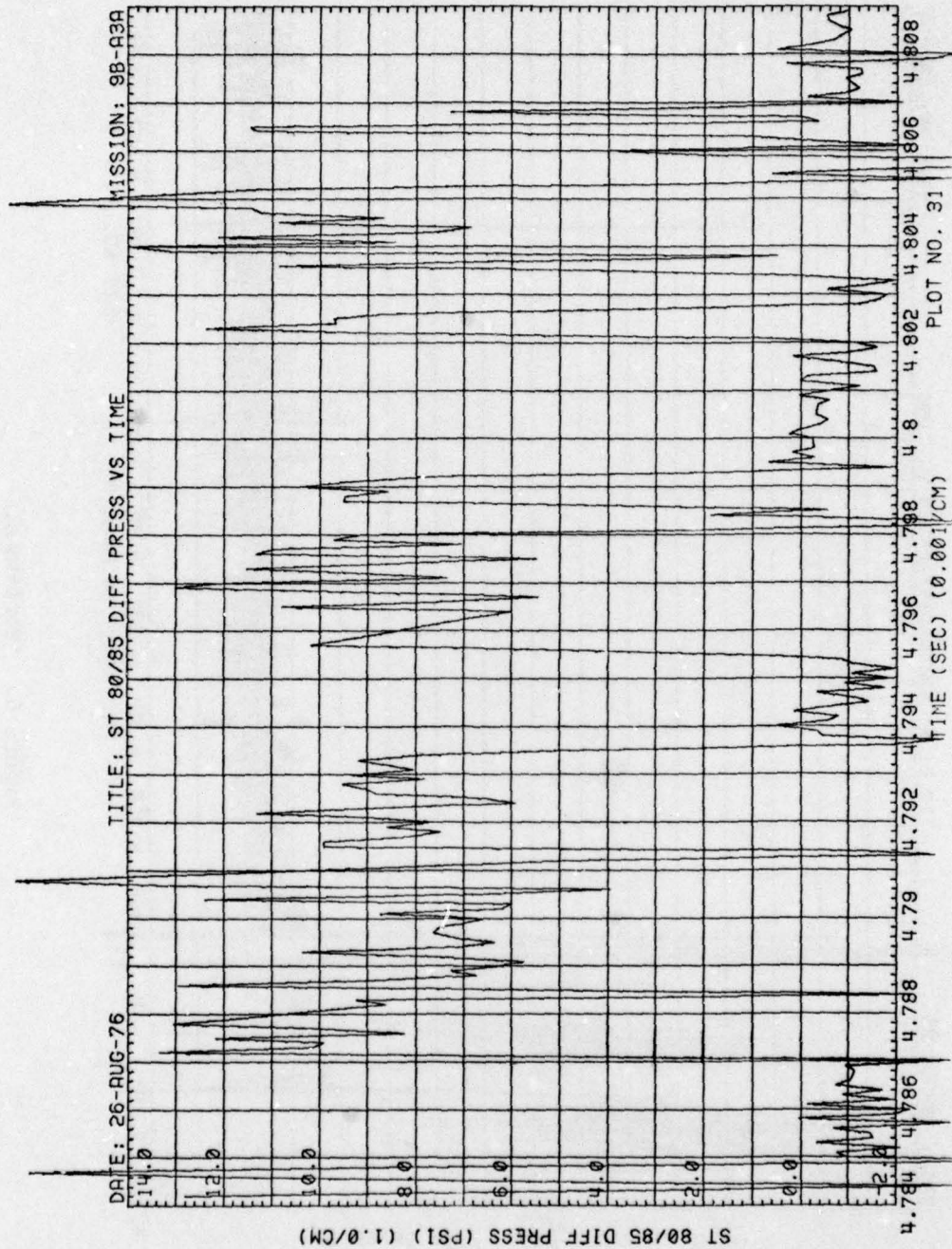


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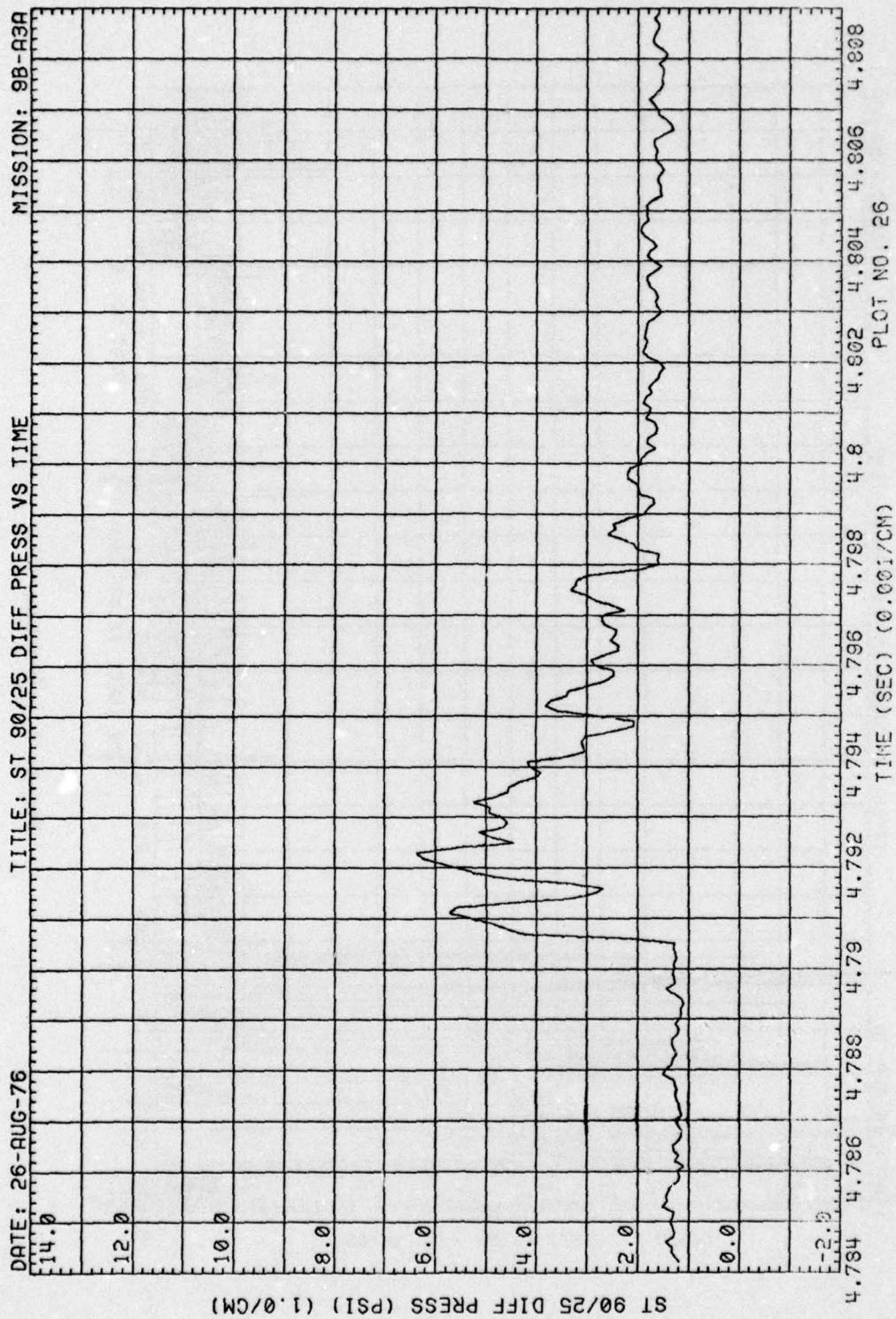


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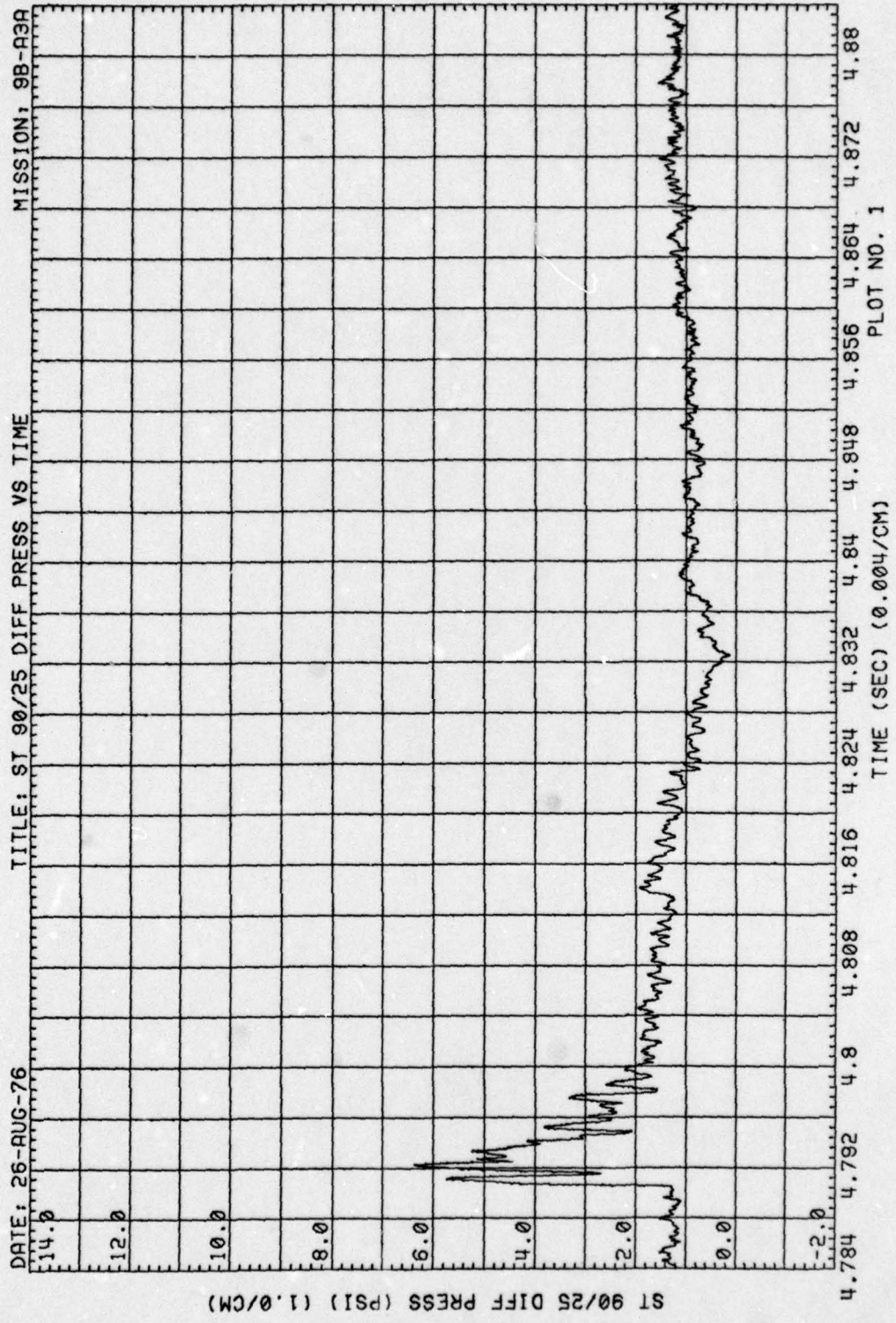


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