DOT-669

LOAD CELL BARRIER IMPACT DATA CONDUCTED WITH A MOVING DEFORMABLE BARRIER

PREPARED BY:
VEHICLE RESEARCH AND TEST CENTER
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EAST LIBERTY, OHIO 43319

FINAL REPORT

JULY 1983

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16. Abstract

A Moving Deformable Barrier was impacted at 37.11 mph into a Load Cell Barrier. Testing was conducted at the TRCO Crash Test Facility, East Liberty, Ohio, on 28 May, 1982.

Data from the load measuring array and the Moving Deformable Barrier center of gravity accelerometer were collected.

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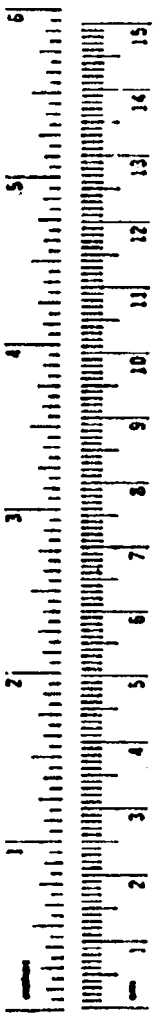
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	metric ton	t
	VOLUME			
tsp	teaspoons	5	milliliters	mL
Tbsp	tablespoons	15	milliliters	mL
in^3	cubic inches	16	milliliters	mL
fl oz	fluid ounces	30	milliliters	mL
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10 000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton (1000 kg)	1.1	short tons	
	VOLUME			
mL	milliliters	0.03	fluid ounces	fl oz
mL	milliliters	0.06	cubic inches	in^3
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F



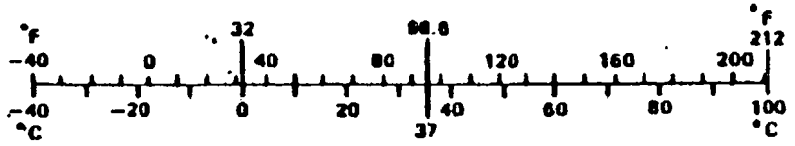


TABLE OF CONTENTS

SECTION 1.0
INTRODUCTION

This report contains load cell barrier data acquired during a test conducted on a Moving Deformable Barrier (MDB) on May 28, 1982. The test speed was 37.11 mph.

Section 2.0 contains general test data and information on the load cell barrier.

The Appendix presents data plots of load cell barrier data and one channel of MDB accelerometer data.

SECTION 2.0

GENERAL TEST & VEHICLE DATA

TEST CONDITIONS

Test Number: 820528

Date of Test: 5/28/82 Test Time: 14:30

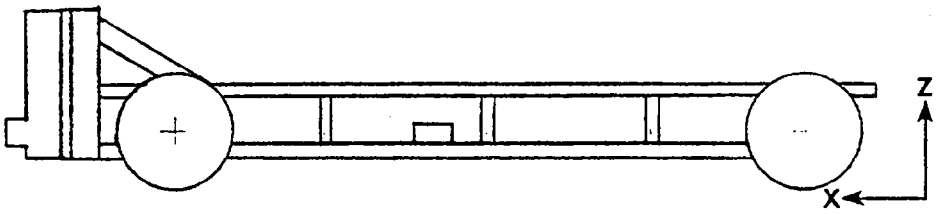
Deformable Barrier Face: DSL-1285

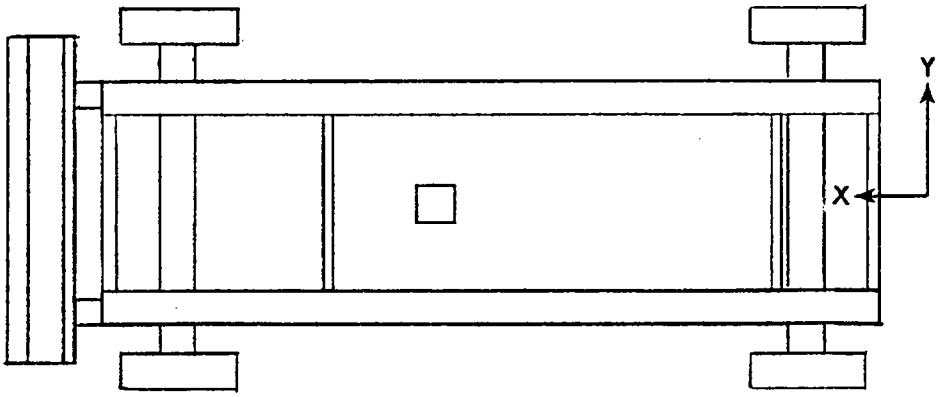
Moving Barrier Weight (lbs): 3000

Moving Barrier Velocity (mph): 37.11

Maximum Static Crush (inches): 15.81

MOVING DEFORMABLE BARRIER ACCELEROMETER LOCATIONS



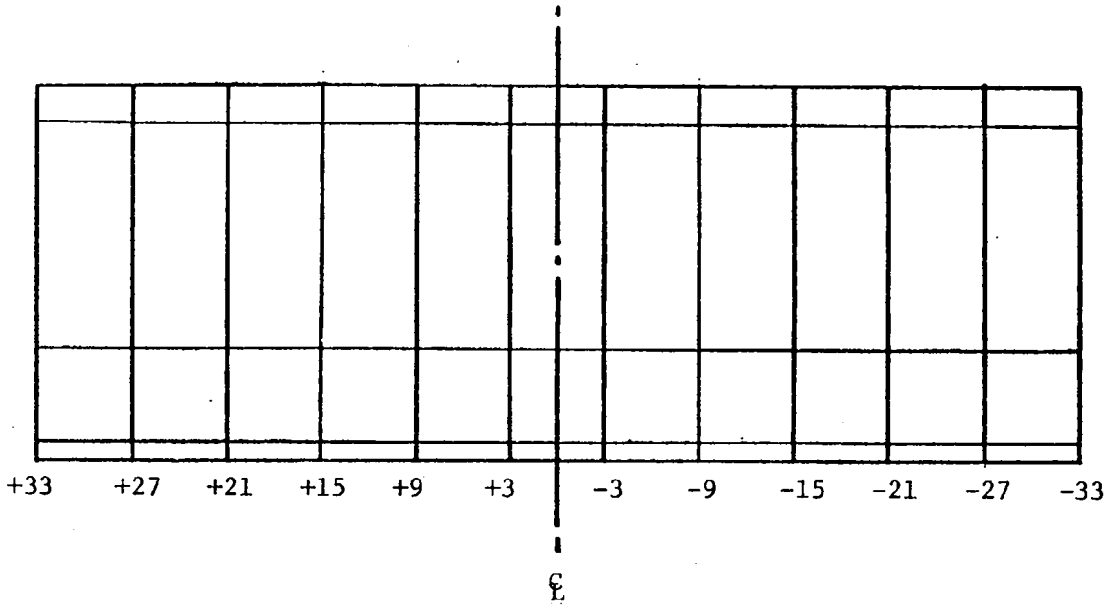


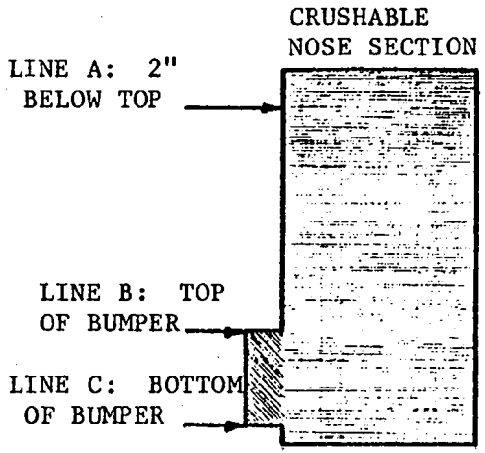
NO.	LOCATION	X*	Y*	Z*
1	Center of Gravity	75.5	0.0	11.5

*Reference: X-Rearmost point of frame (+ to forward), Y-Barrier centerline (+ to right), Z-Ground Level (+ to up).

All measurements in inches.

MEASUREMENTS OF MOVING BARRIER CRUSHABLE NOSE SECTION





		+33	+27	+21	+15	+9	+3	-3	-9	-15	-21	-27	-33
A	POST-TEST	24.31	24.31	24.25	24.31	24.44	24.56	24.63	24.75	24.94	25.06	25.38	25.63
	PRE-TEST	14.94	14.94	14.94	14.94	14.94	14.94	14.94	14.94	14.94	14.94	14.94	14.94
	CRUSH	9.37	9.37	9.31	9.37	9.50	9.62	9.69	9.81	10.00	10.12	10.44	10.69
B	POST-TEST	23.38	23.50	23.63	23.75	23.81	24.13	24.25	24.44	24.50	24.81	25.00	25.25
	PRE-TEST	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94
	CRUSH	12.44	12.56	12.69	12.81	12.87	13.19	13.31	13.50	13.56	13.87	14.06	14.31
C	POST-TEST	24.75	24.50	24.63	24.88	24.88	25.00	25.19	25.38	25.56	25.69	25.88	26.75
	PRE-TEST	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94	10.94
	CRUSH	13.81	13.56	13.69	13.94	13.94	14.06	14.25	14.44	14.62	14.75	14.94	15.81

*Points are in inches. Negative is left of centerline, Positive is right of centerline.

NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MFGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
MDB CG X DIR.	ACCEL.	4-202-0001	18853	BELL HOWELL	5-20-82	0.240.MV/G	100G

THE NHTSA LASER INTERRUPTION SYSTEM (LIS)

The NHTSA LIS was used to measure test vehicle final velocity independently of the trip switch system. The following brief description of the LIS is taken from the final report, "Impact Velocity Measurement Systems Equipment Development," R.H. Arendt, G.L. Voytovich and P.M. Miller, prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, Contract No. DOT-HS-9-02238, December 1981.

The Laser Interruption System (LIS) operates on a non-contacting light principle in order to obtain a highly accurate measurement of motor vehicle velocity just prior to impact during a crash test. The system operates over a speed range from 2 to 65 MPH and has a calculated measurement accuracy of $\pm$ 0.012 MPH.

The instrument measures the time interval for a narrow, slotted wand attached to the vehicle to pass between two small diameter, parallel laser light beams. The distance between the sensing beams of the instrument is determined with a precision vernier caliper prior to each test and any deviation from design spacing is input into the system microprocessor during instrument pre-test setup. The microprocessor calculates vehicle velocity from the measured time interval and the known beam spacing.

The instrument has been designed to assure that the displacement and time measurement accuracy are within design specifications and that the accuracy of these fundamental measurements are traceable to the National Bureau of Standards. A self testing system incorporated into the instrument generates a known test input based on an independent crystal clock to verify that all aspects of the instruments are operating and to a known accuracy.

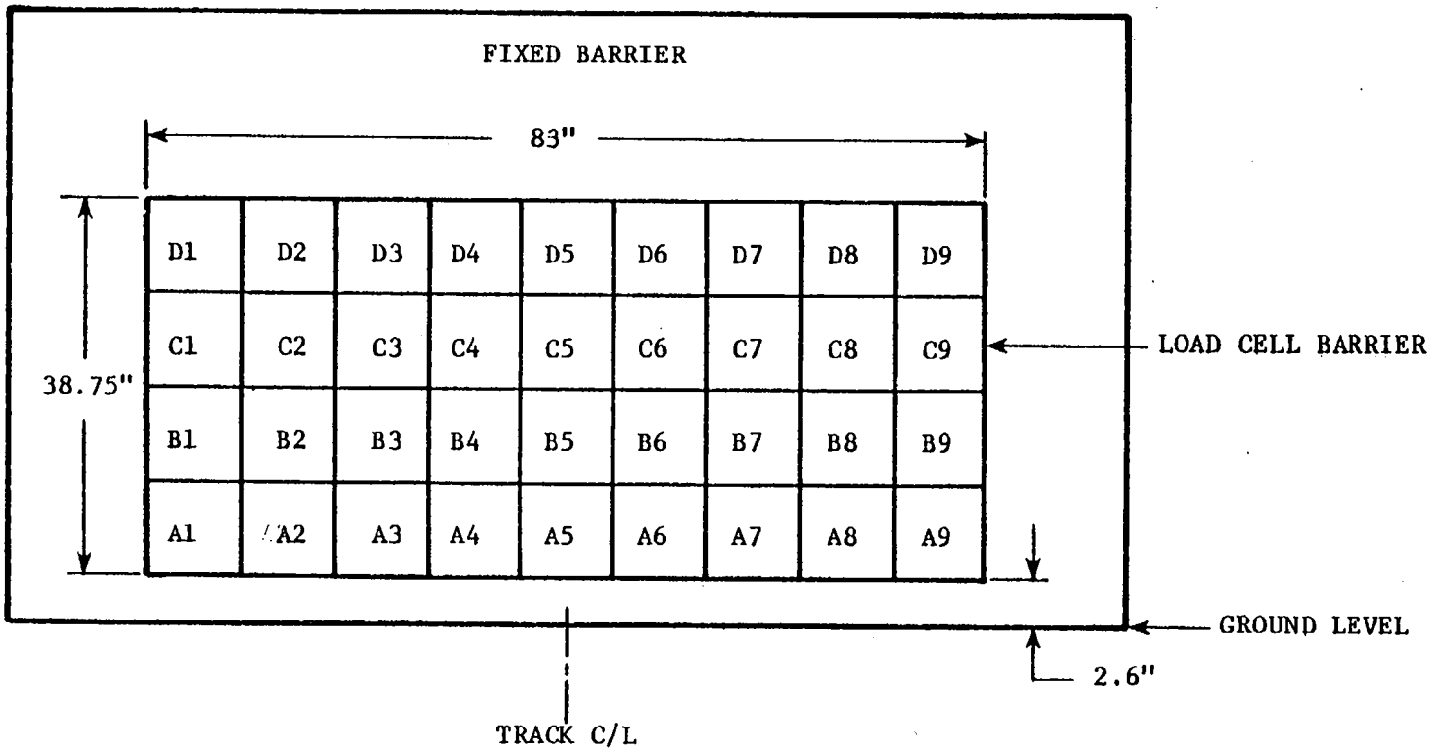
LOAD CELL BARRIER FACE

The load cell barrier face, as shown on the following page, consists of a four row by nine column array of 50k lb capacity Interface Model 1220-FS load cells faced with 1 3/4 inch plywood. The plywood sections measure 9 inches wide by 10 inches high for the upper two rows (rows C and D) and 9 inches by 9 inches for the lower two rows (rows A and B). The lower edge of the barrier is 2 5/8 inches above the grade.

The load cell barrier instrumentation provides an axial force-time history map of the crash event. Data recorded by instrumentation are presented in the Appendix.

36 LOAD CELLS
4 ROWS
9 COLUMNS

FRONT VIEW

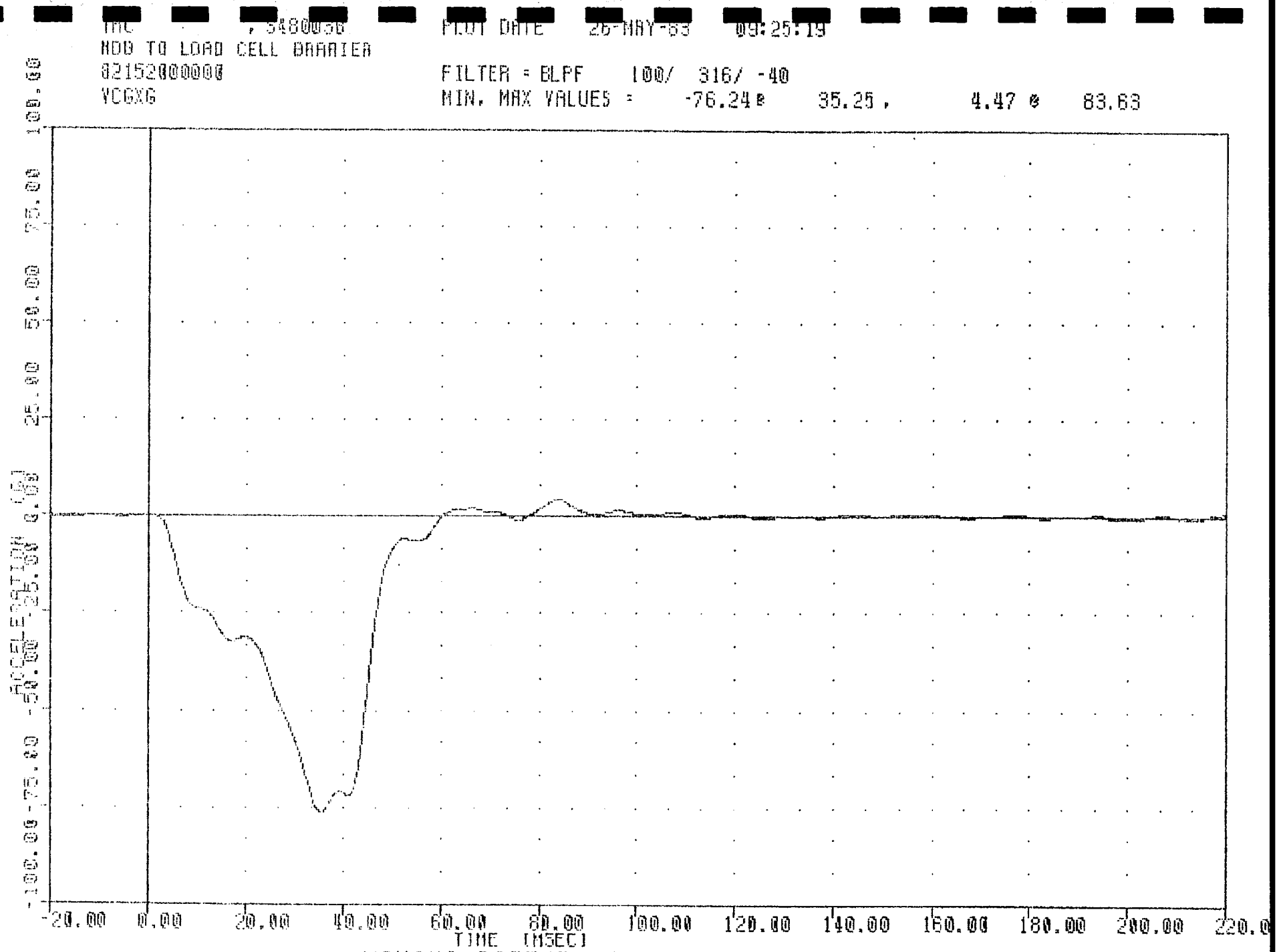


BARRIER LOAD CELL CONFIGURATION

APPENDIX

DATA PLOT PRESENTATION

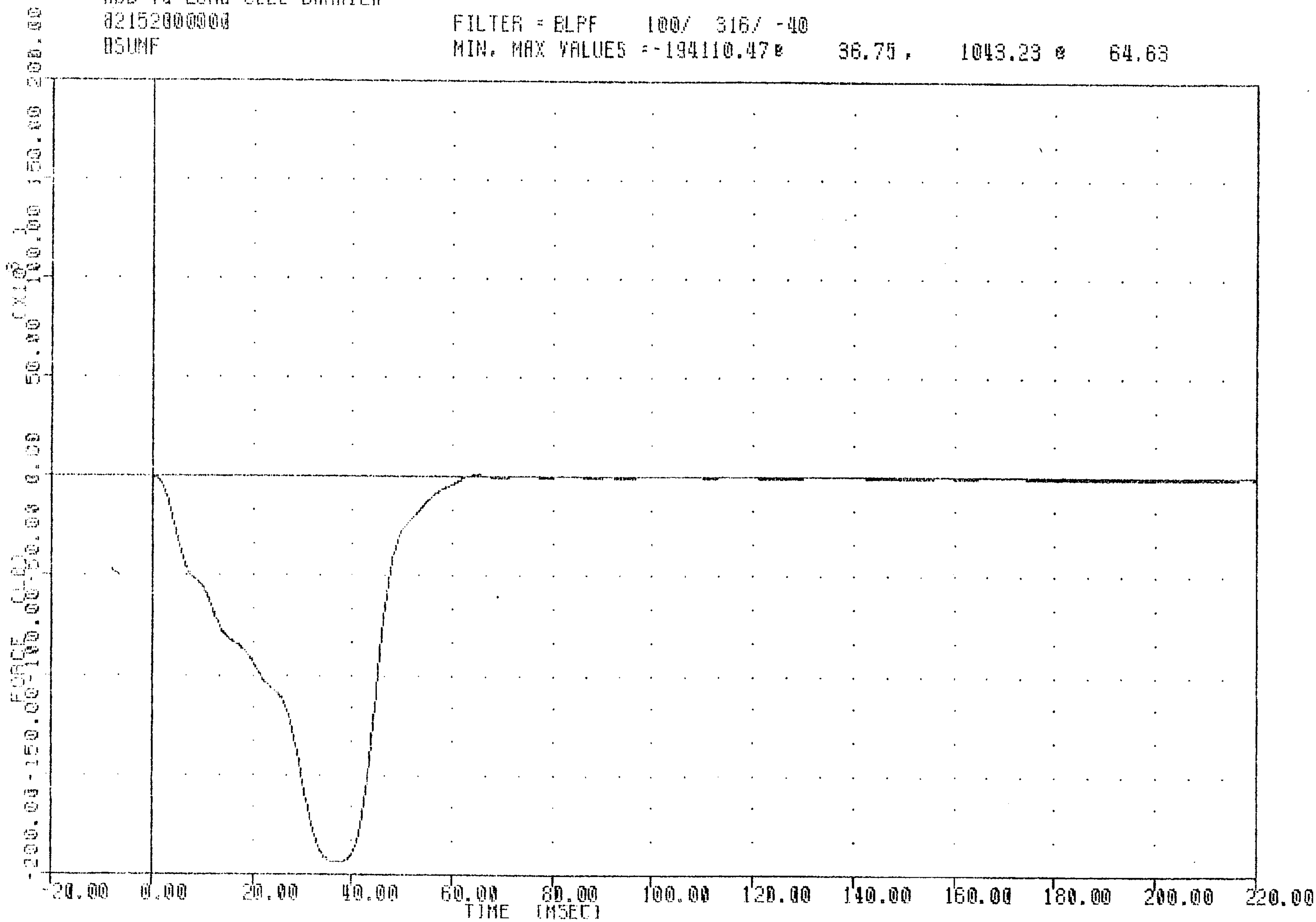
Data plots generated from the crash test data are presented on the following pages. All data were filtered according to SAE J211.



MOVING BARRIER INTO LOAD CELL BARRIER
VEHICLE CG ACCELERATION X AXIS

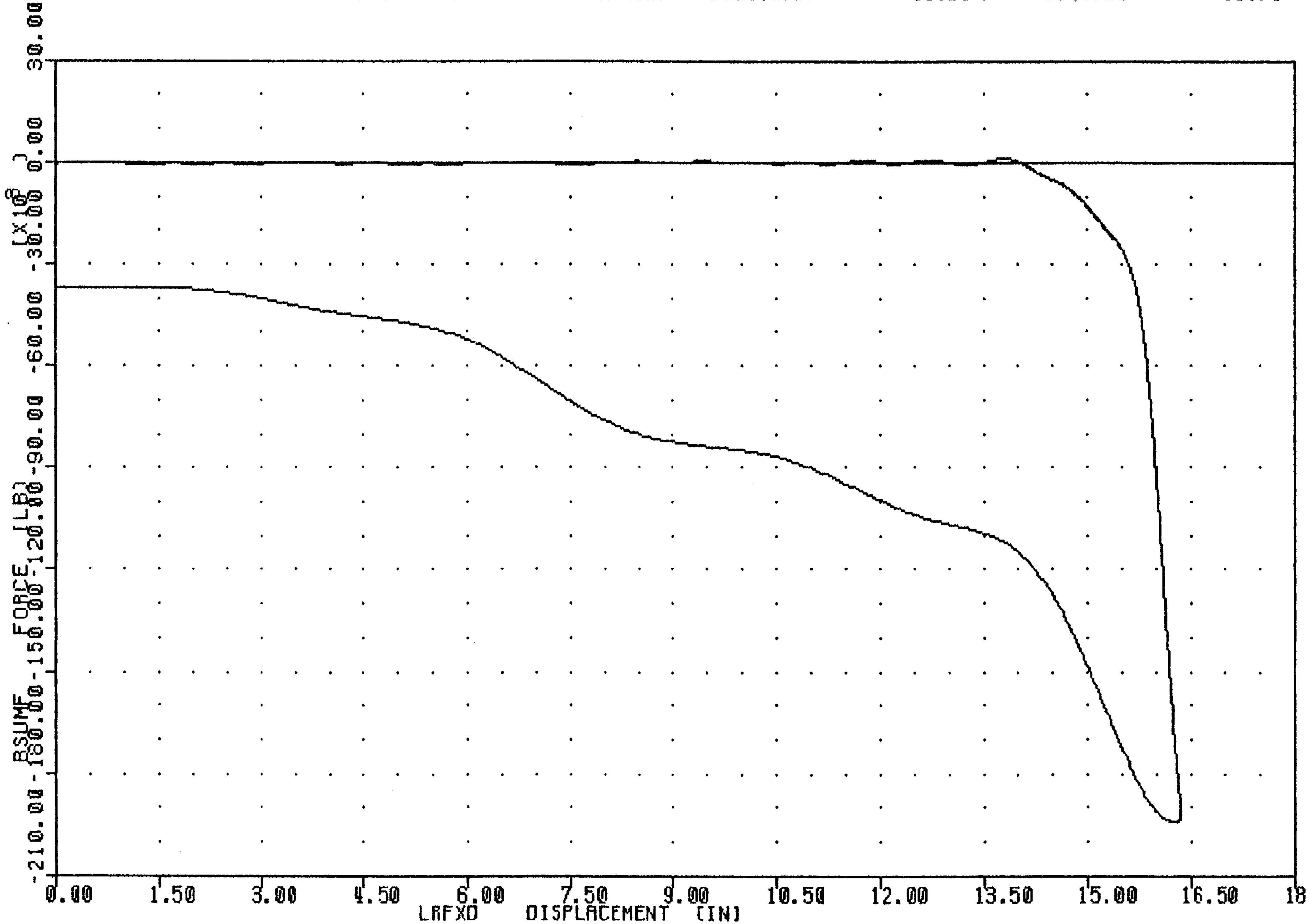
TRC [redacted] ,5480056 PLOT [redacted] DATE 27-[redacted]-83 [redacted] 10:07:04
MDD TO LOAD CELL BARRIER
02152000000
DSUMF

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -194110.47 @ 36.75 , 1043.23 @ 64.63



MOVING BARRIER INTO LOAD CELL BARRIER
SUM OF MOVING BARRIER FORCE

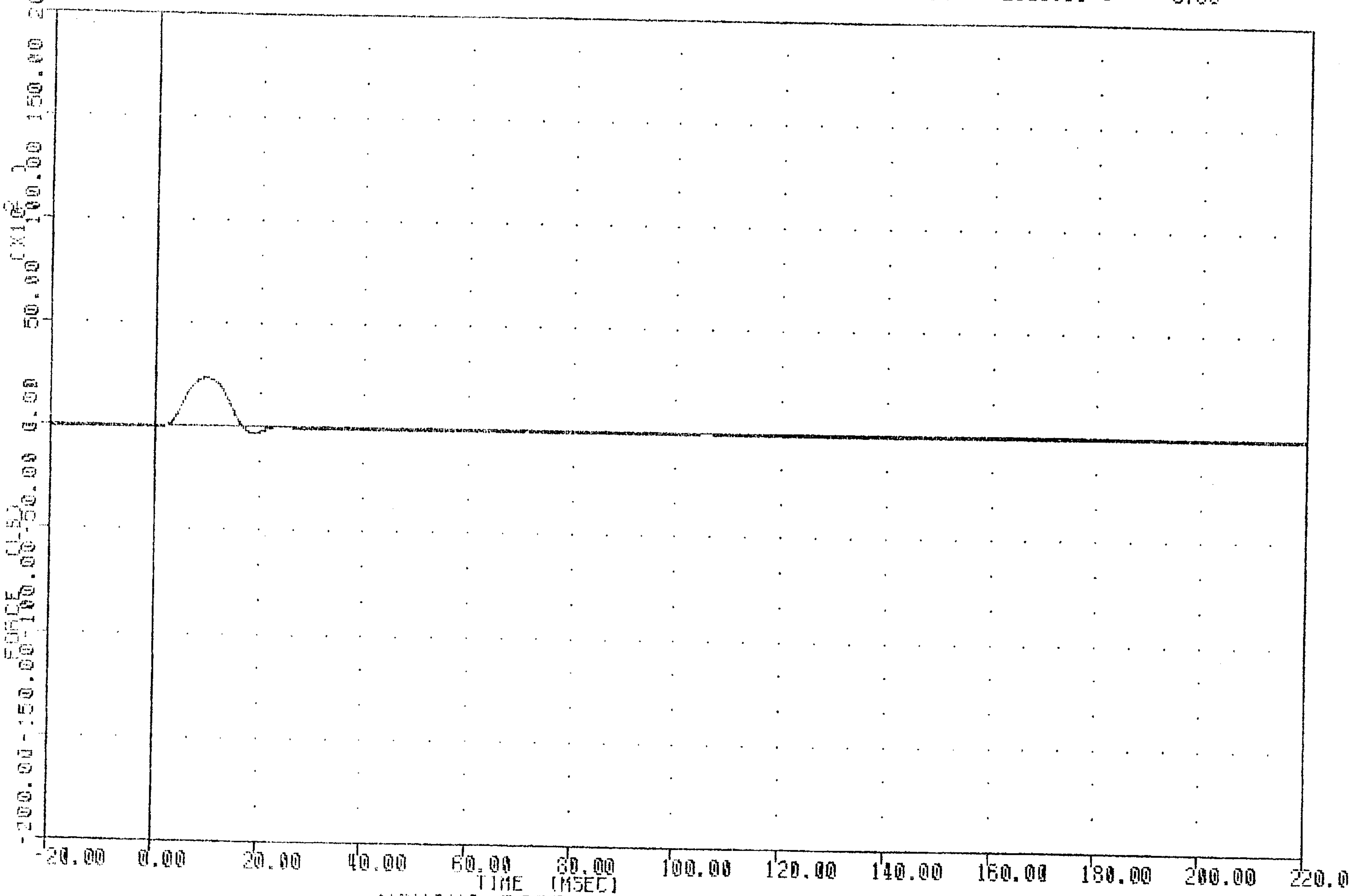
TRC VRTC ,S480038 MOV BAR INTO LOAD CELL BAR 82152 PLOT DATE 11-AUG-83 09:03:16
LRFXD FILTER = BLPF 300/ 949/ -40 MIN, MAX = -0.88 @ -345.96 , 16.35 @ -191465.58
BSUMF FILTER = BLPF 100/ 317/ -40 MIN, MAX = -194114.17 @ 16.26 , 1043.23 @ 13.79



MOVING BARRIER INTO LOAD CELL BARRIER
MOVING BARRIER VS CRUSH

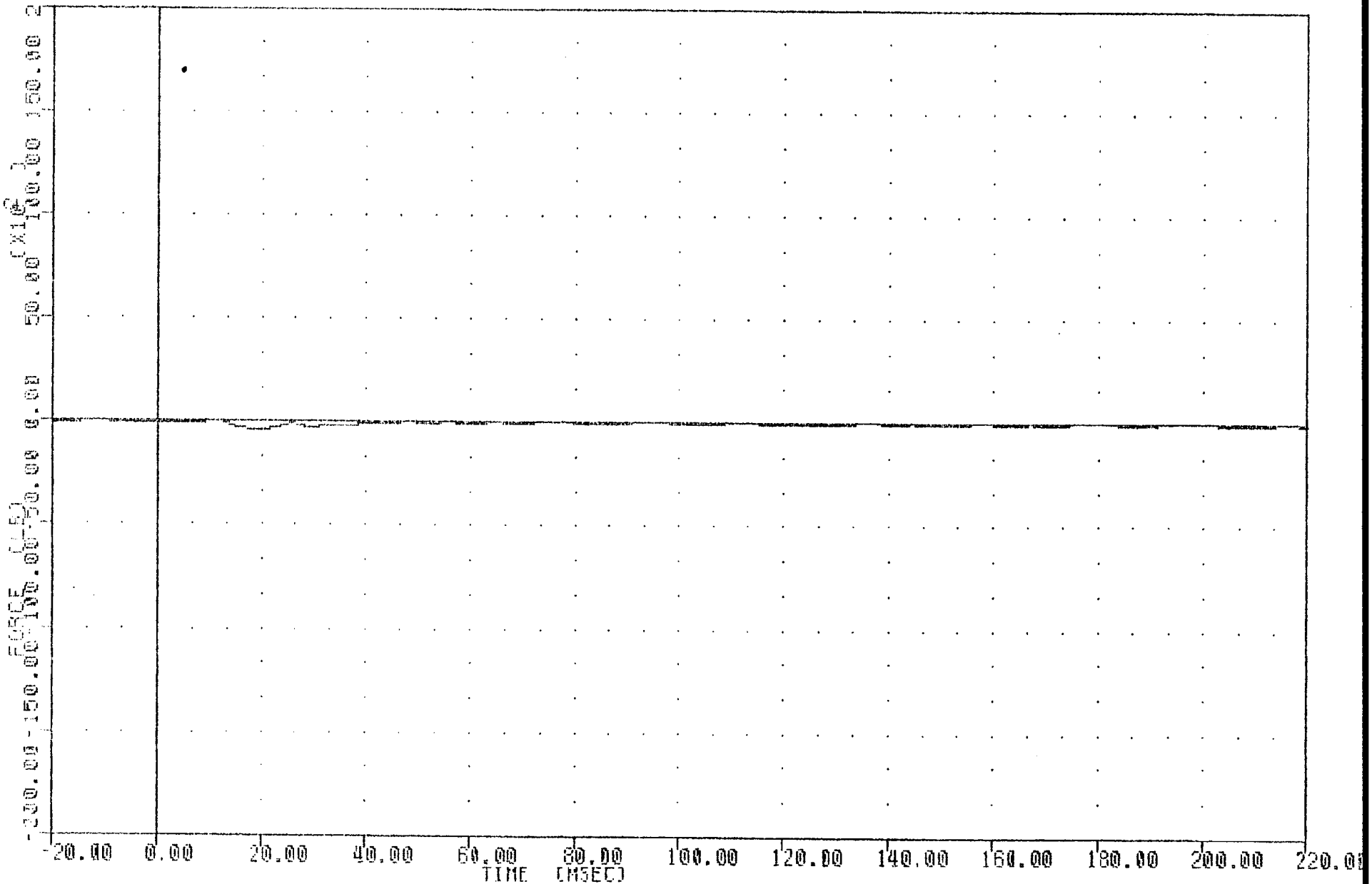
NAB TO LOAD CELL BARRIER
A2152000000
BAIF

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -288.73 @ 18.75 , 2325.09 @ 9.63



MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A1

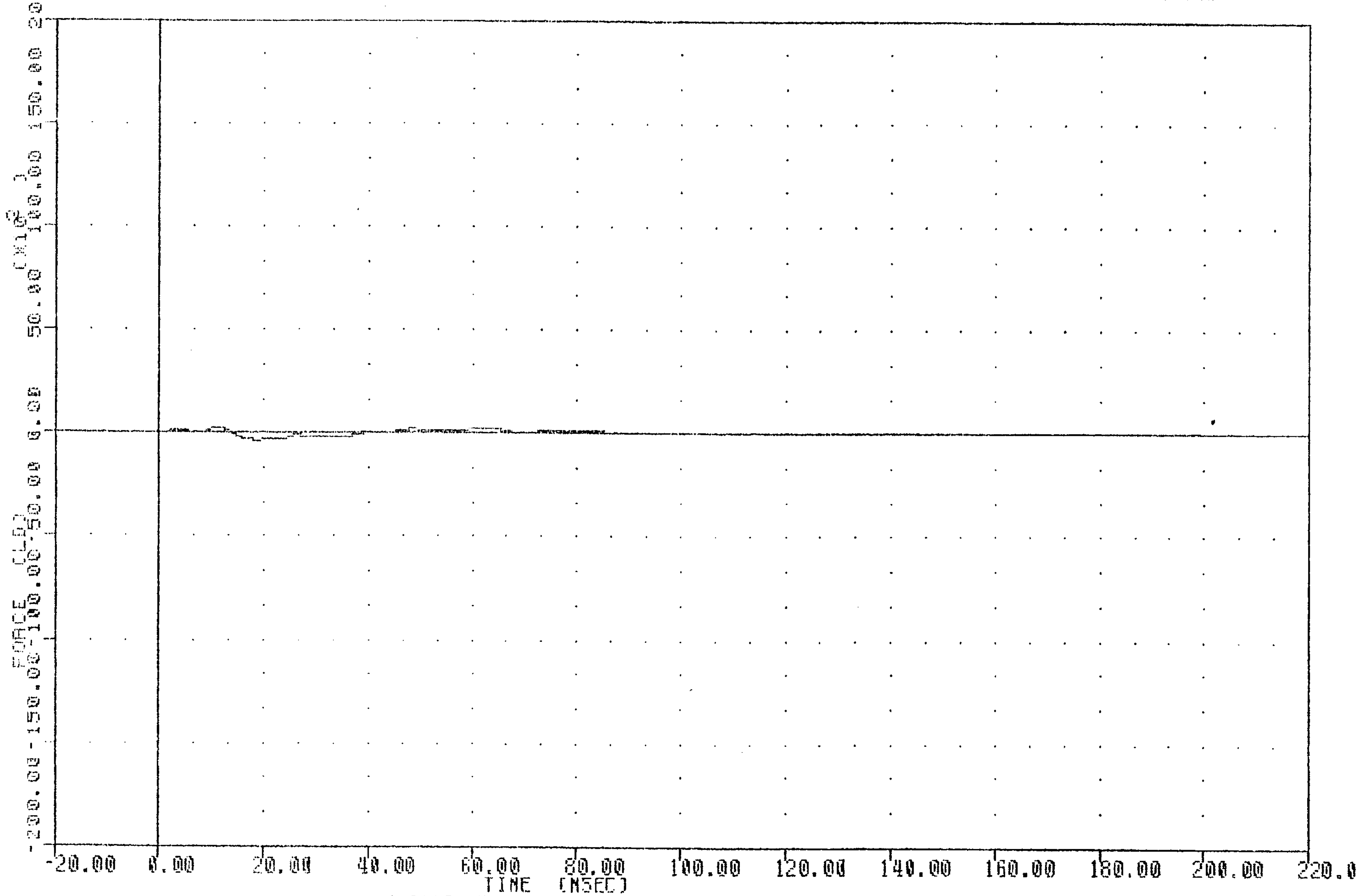
TAC [redacted] PLOT DATE 20 MAY 03 08:25:19
MDB TO LOAD CELL BARRIER
8215200000B
BA2F
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -364.58 @ 20.13 , 52.93 @ 11.13



MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A2

[redacted]
MOB TO LOAD CELL BARRIER
82152000000
BA3F

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -357.15 @ 18.50 , 276.59 @ 11.25

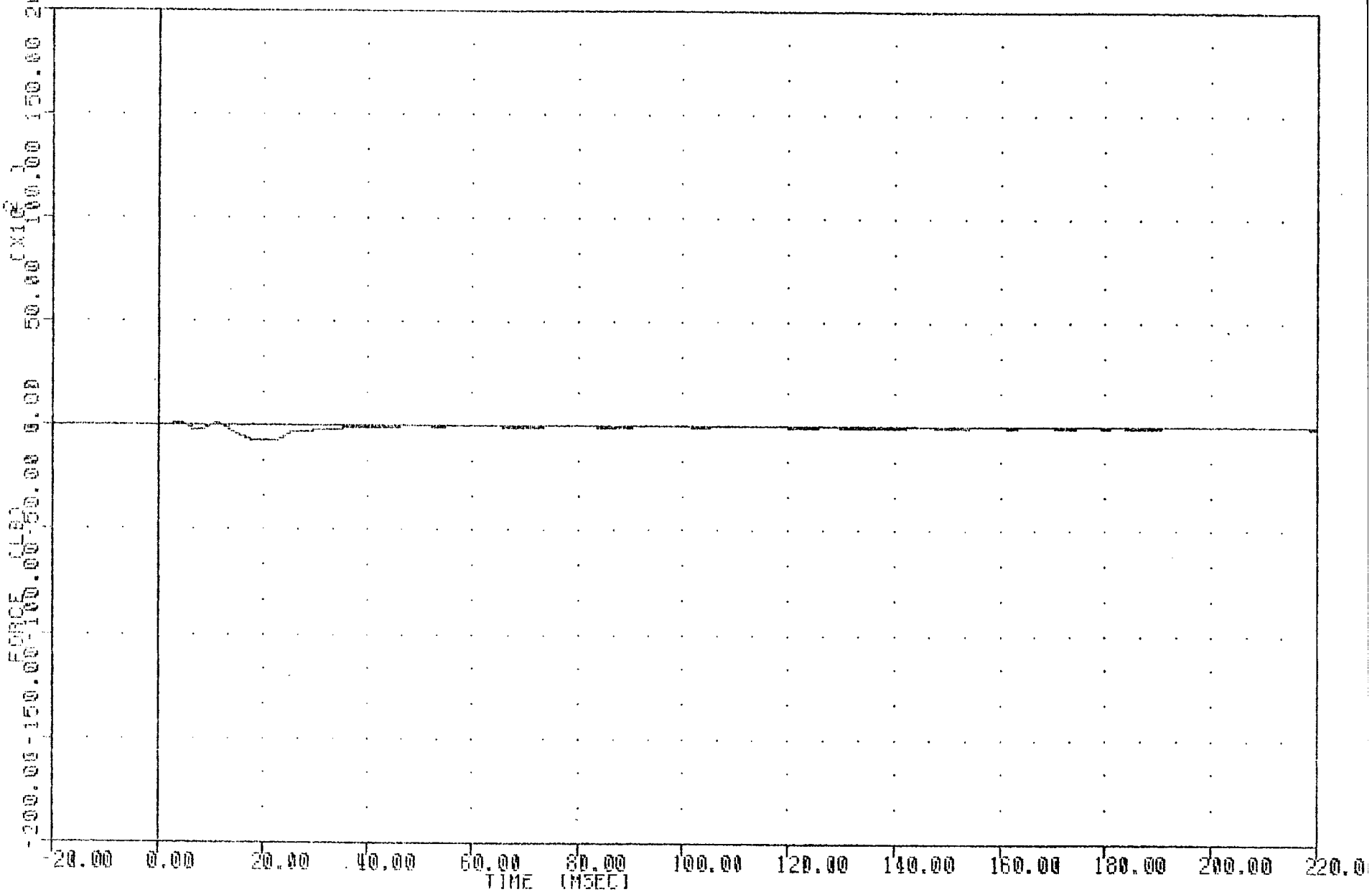


MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A3

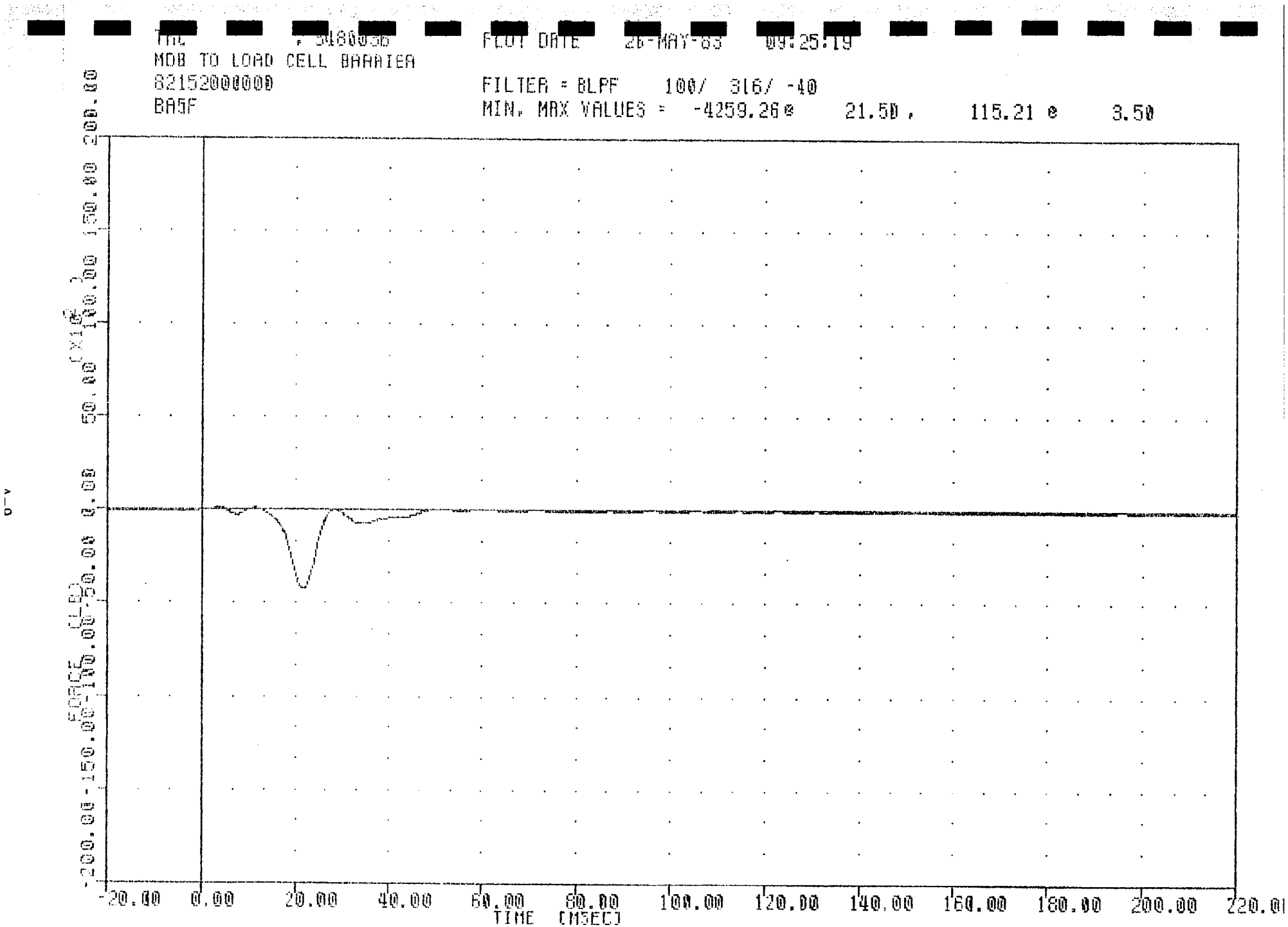
[redacted]

MDB TO LOAD CELL BARRIER
02152000000
BA4F

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -710.67 @ 21.88 , 112.81 @ 3.63

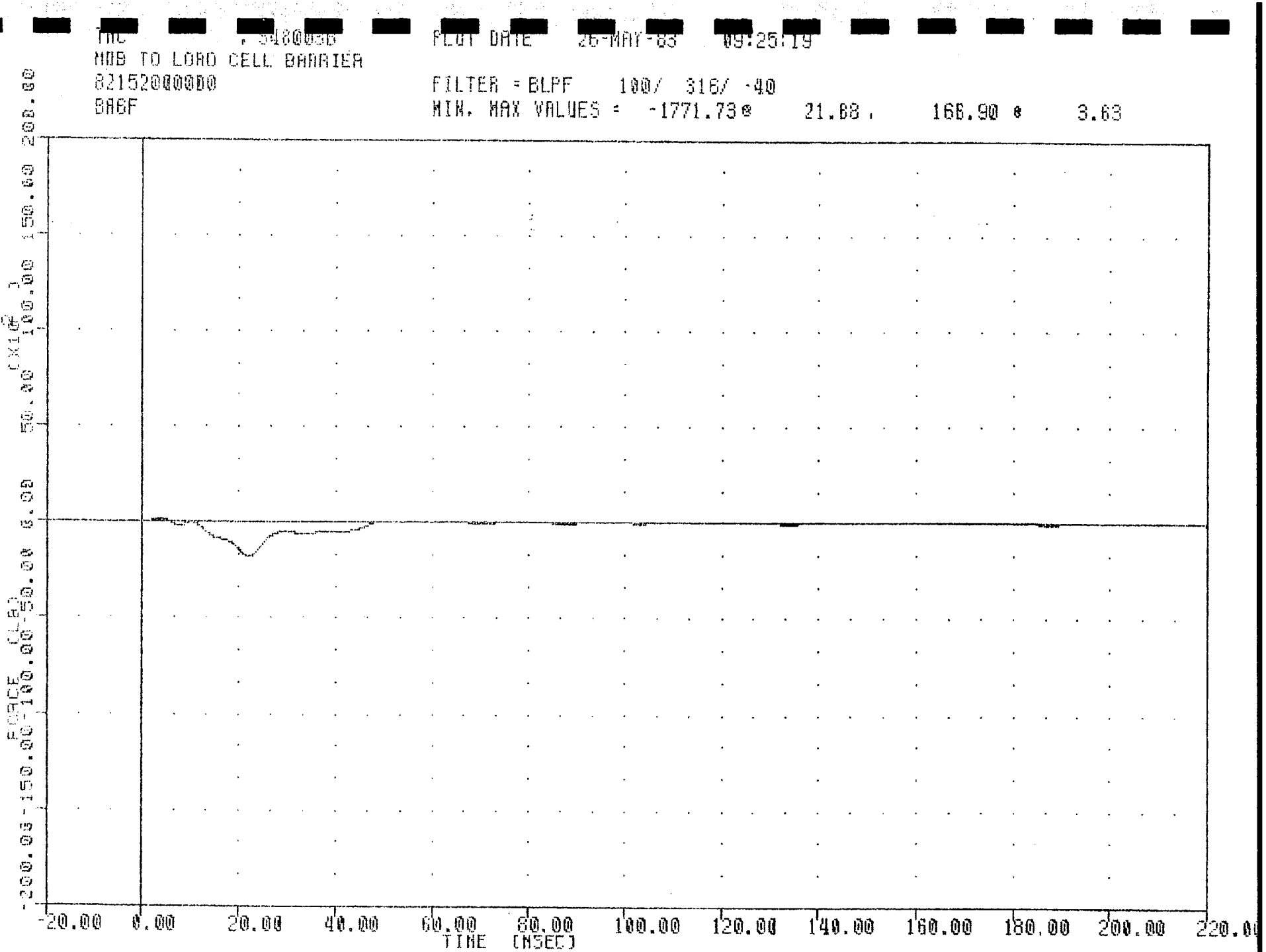


MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A4



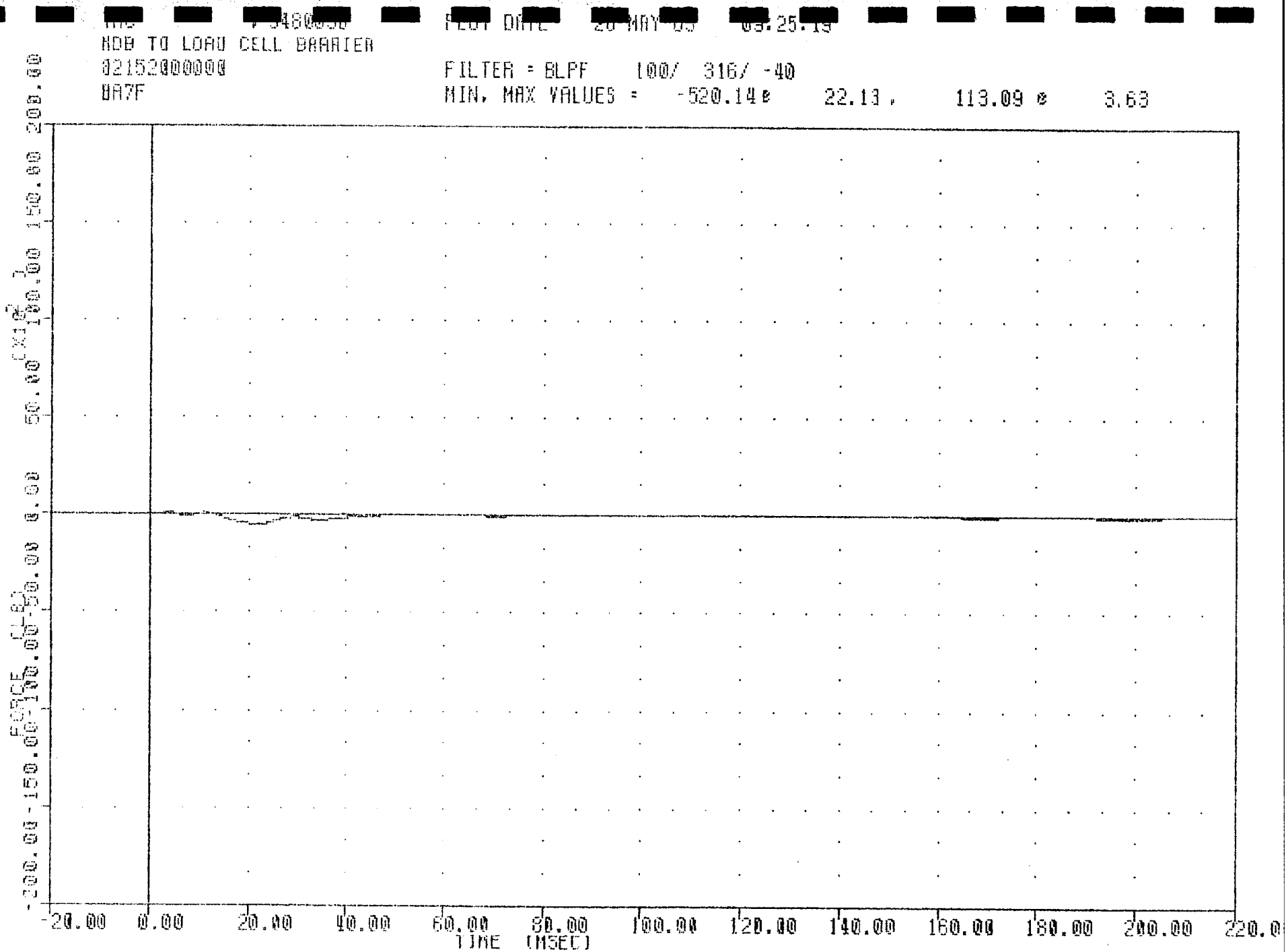
MOVING BARRIER INTO LOAD CELL BARRIER

LOAD CELL BARRIER FORCE A5

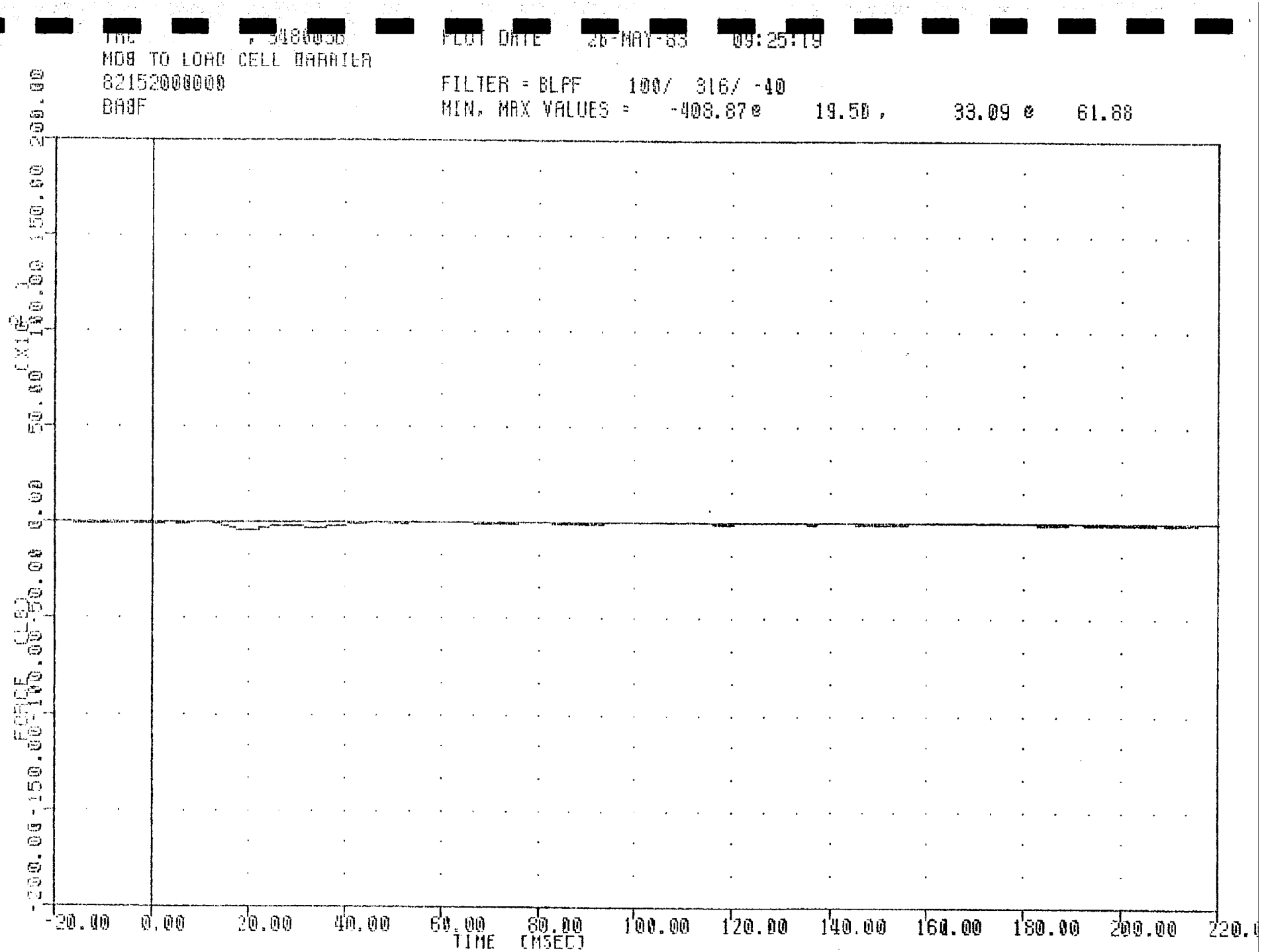


MOVING BARRIER INTO LOAD CELL BARRIER

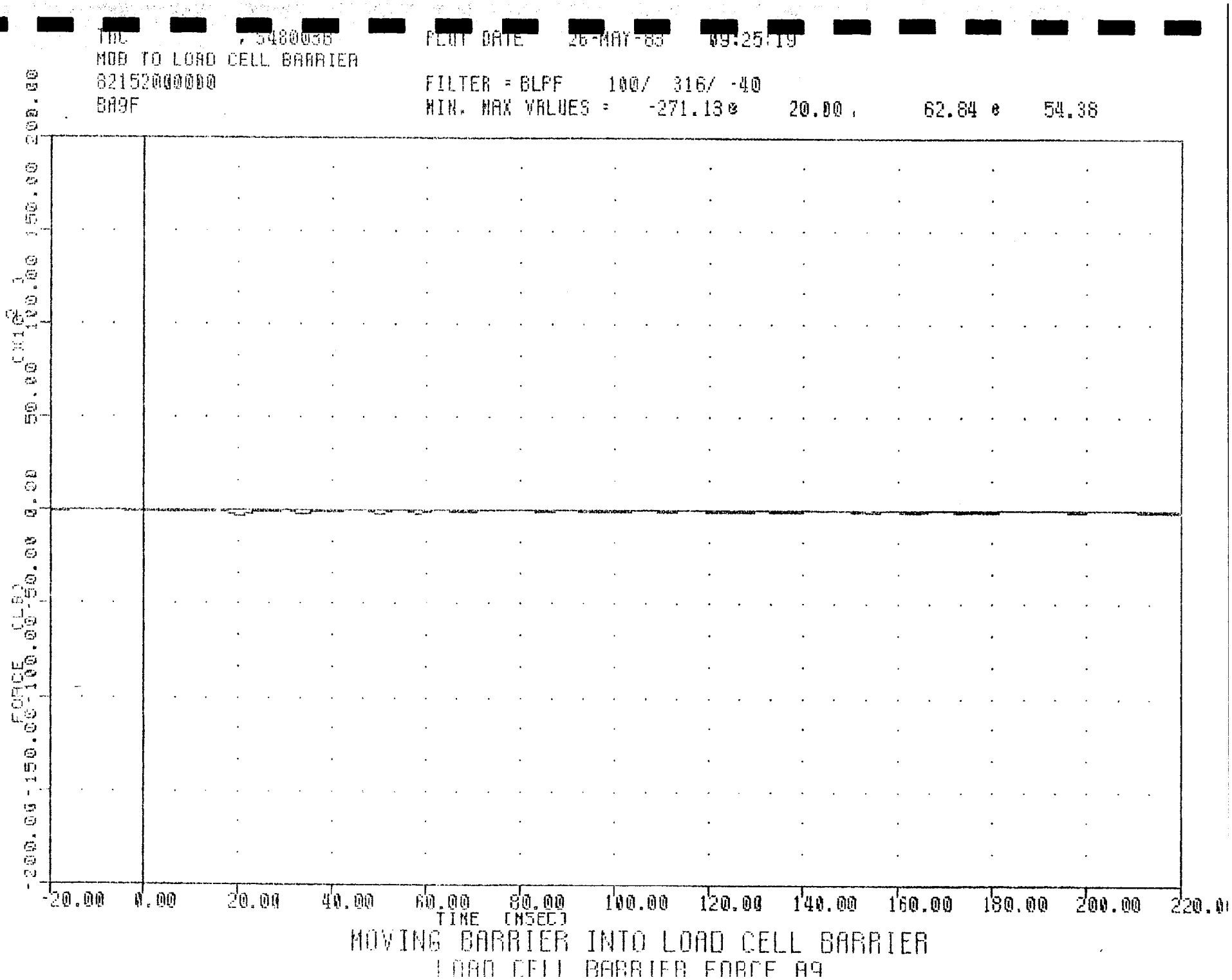
LOAD CELL BARRIER FORCE AG

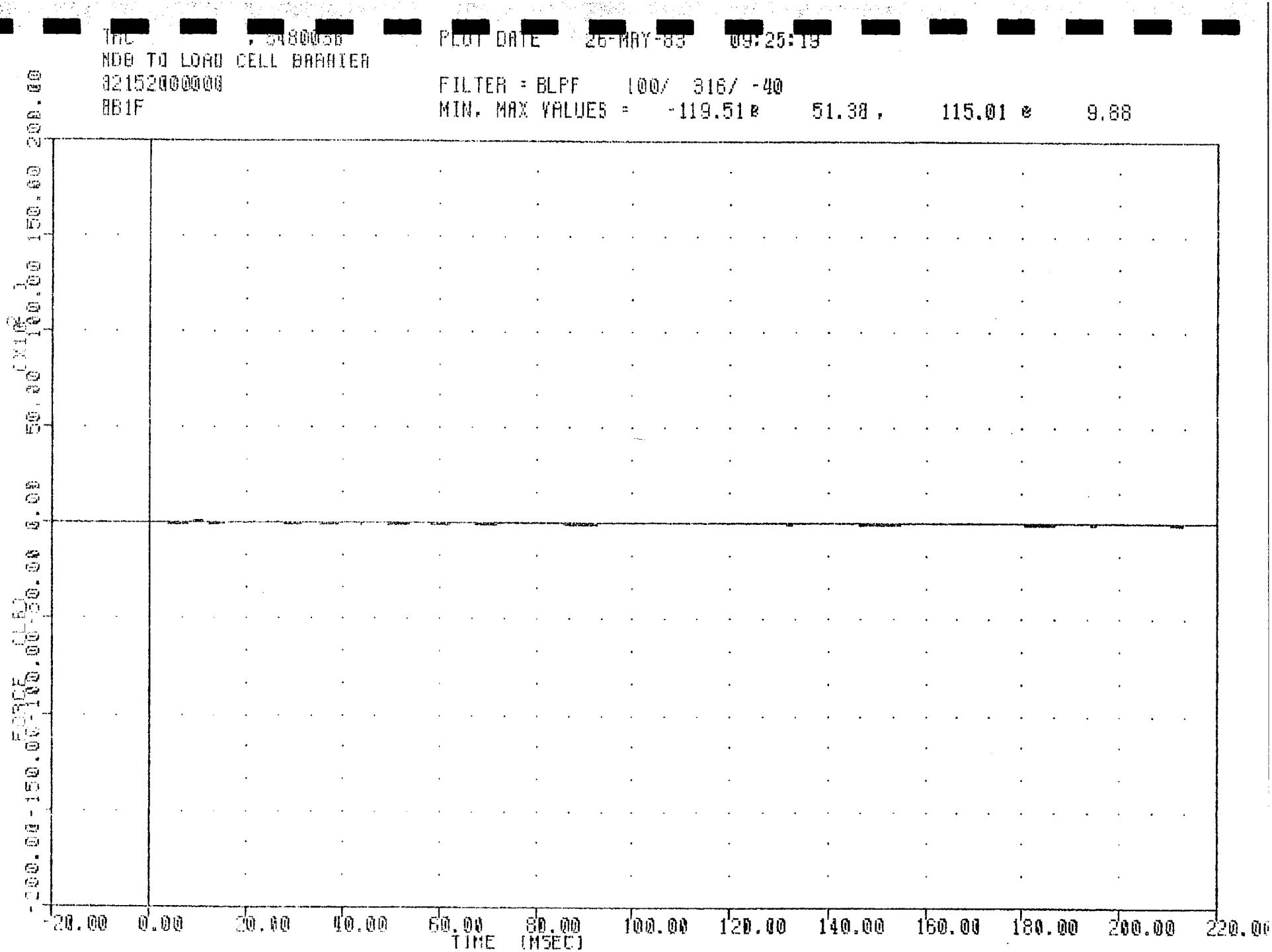


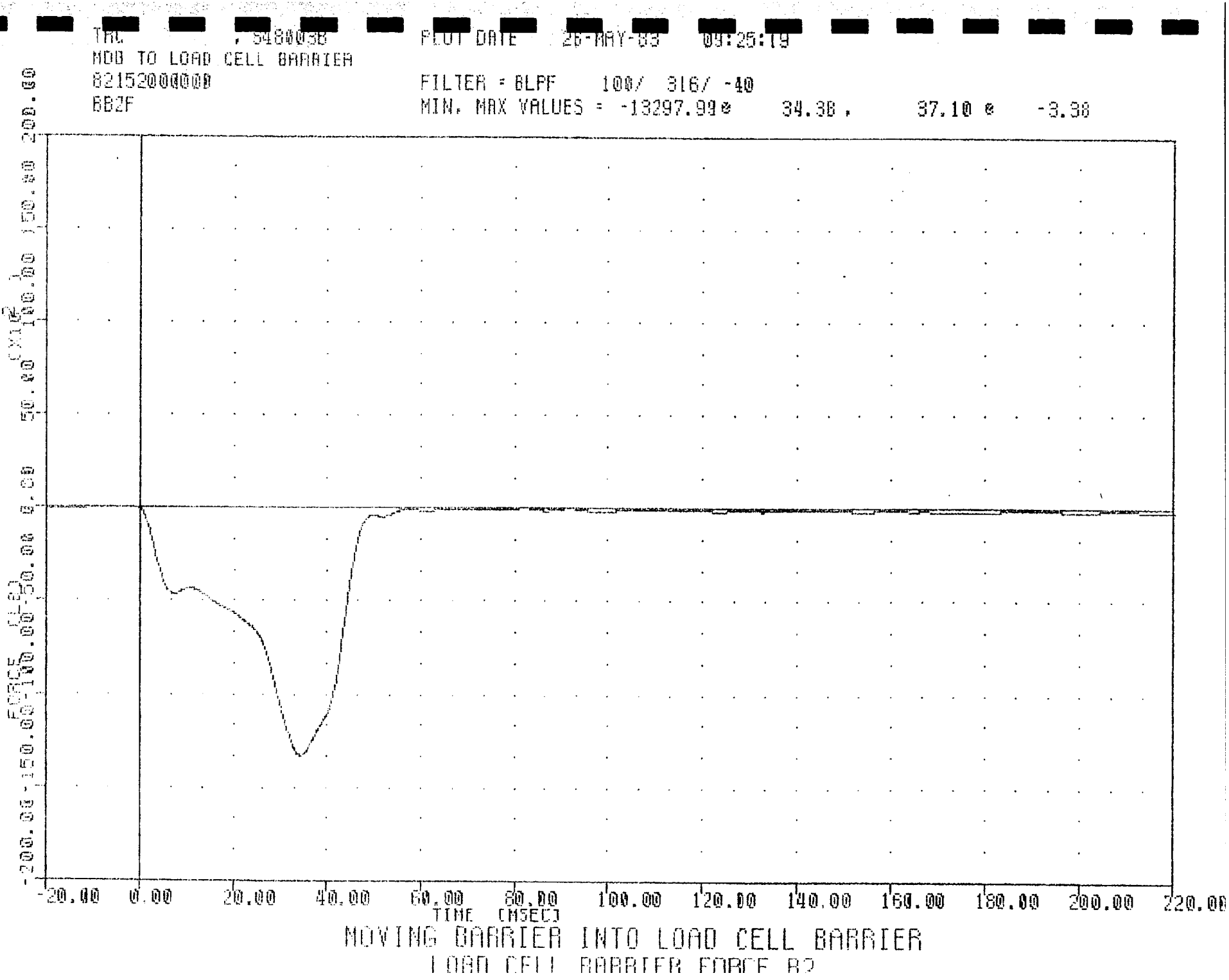
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A7

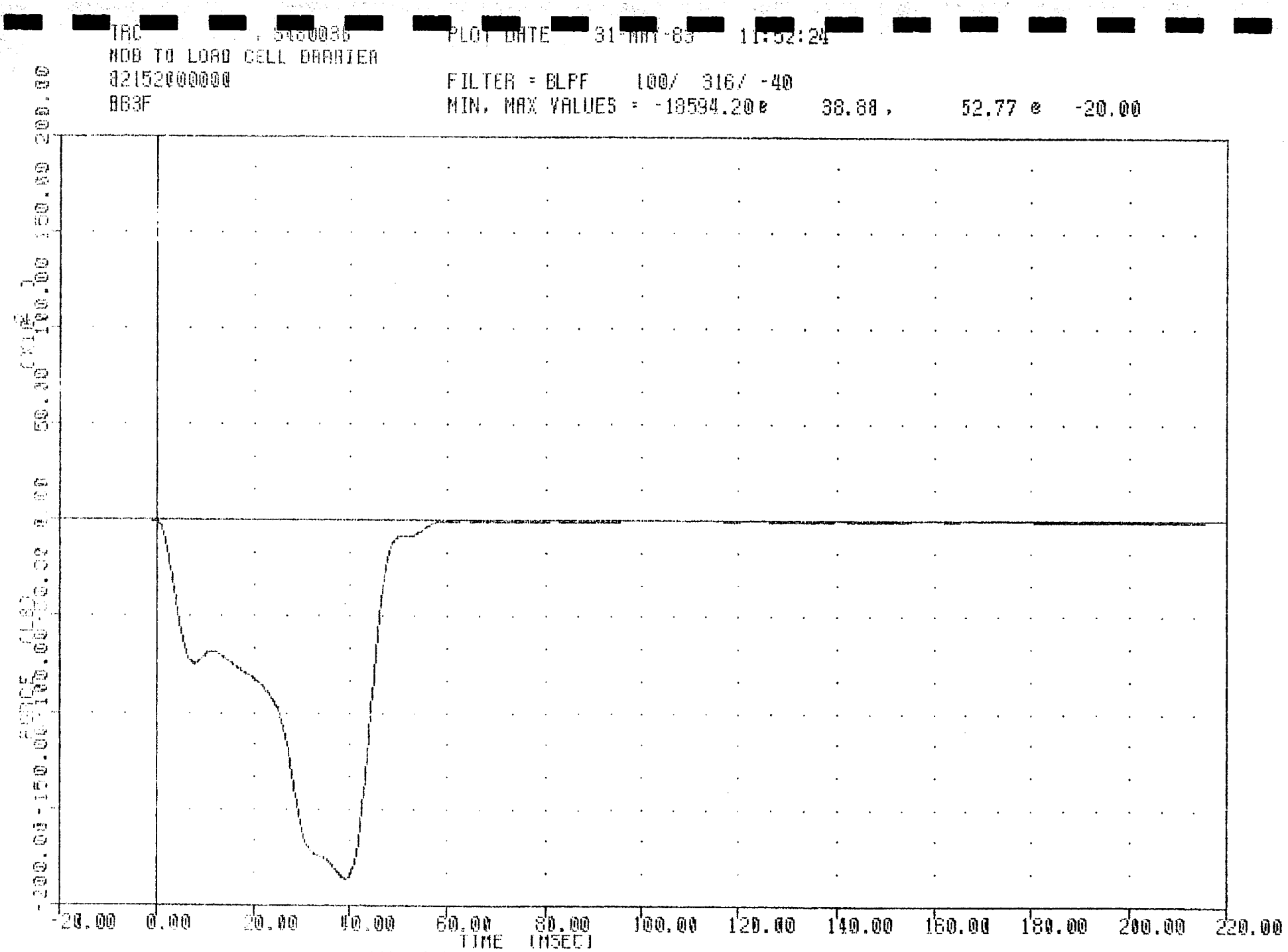


MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE AS

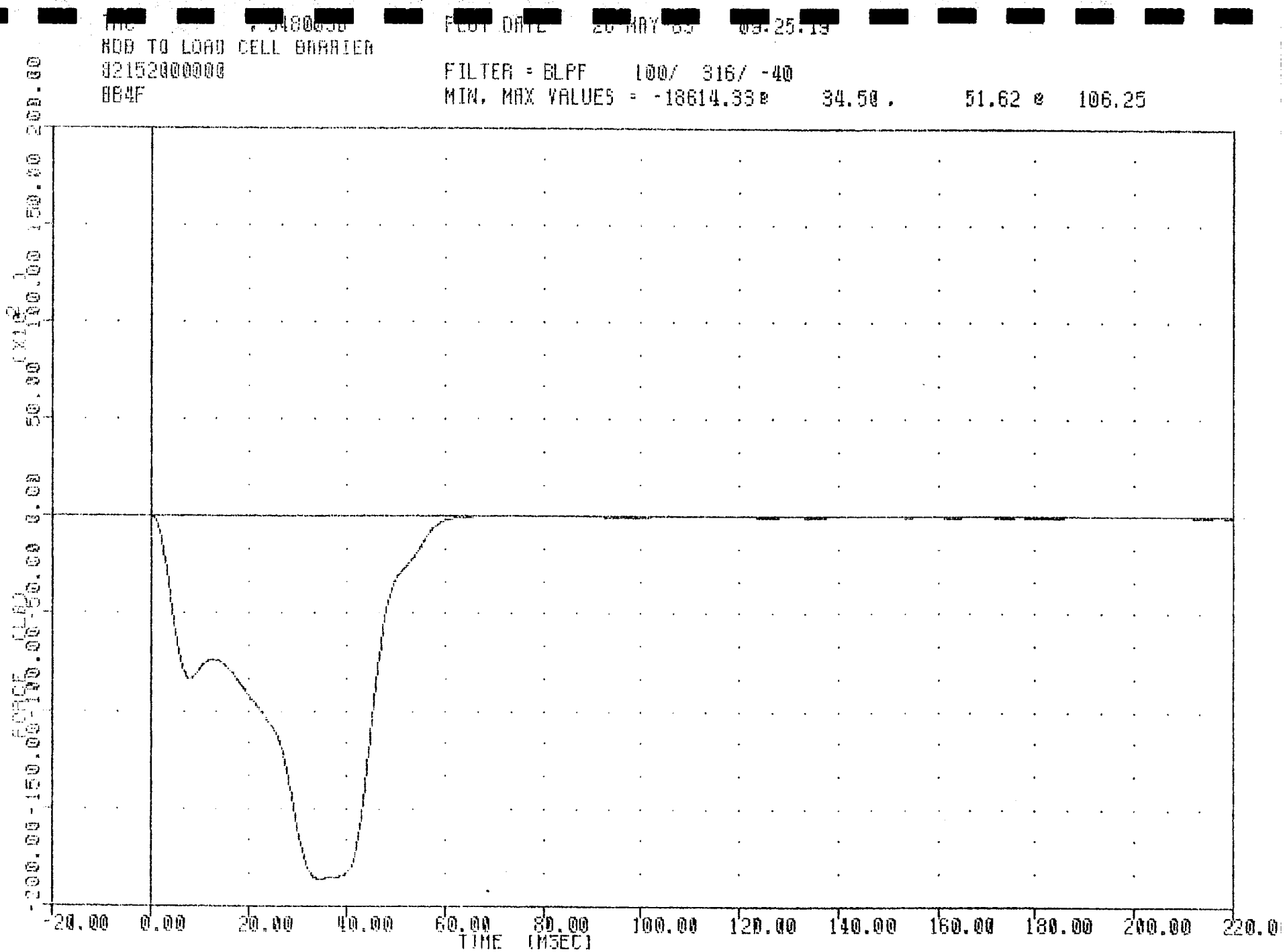

TAL , 5480036
PLOT DATE 26-MAY-85 09:25:19
MOB TO LOAD CELL BARRIER
82152000000
BA9F
FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -271.13 @ 20.00 , 62.84 @ 54.38
FORCE (LBS)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A9


THC , 5480050
PLOT DATE 26-MAY-83 09:25:19
NDB TO LOAD CELL BARRIER
821520000000
FILTER = BLPF 100/ 316/ -40
BB1F
MIN. MAX VALUES = -119.51@ 51.38 , 115.01 @ 9.88
FORCE (LBS) (X10^2)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE B1


TRL , 5480038
MDB TO LOAD CELL BARRIER
8215200000
6B2F
PLOT DATE 26-MAY-03 09:25:19
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -13297.99@ 34.38 , 37.10 @ -3.38
FORCE (LB)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
(X10^2)
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE B2



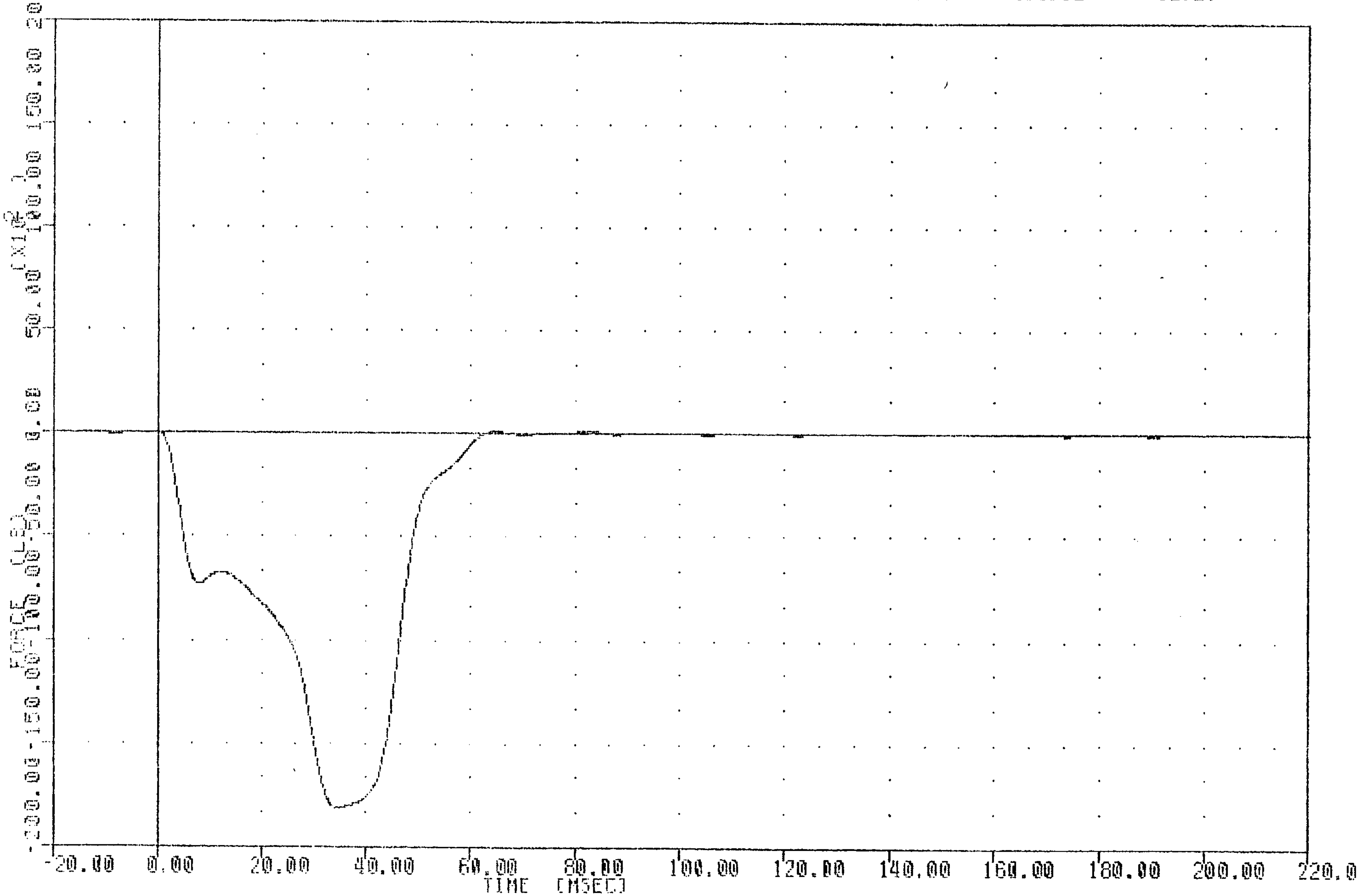
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE B3



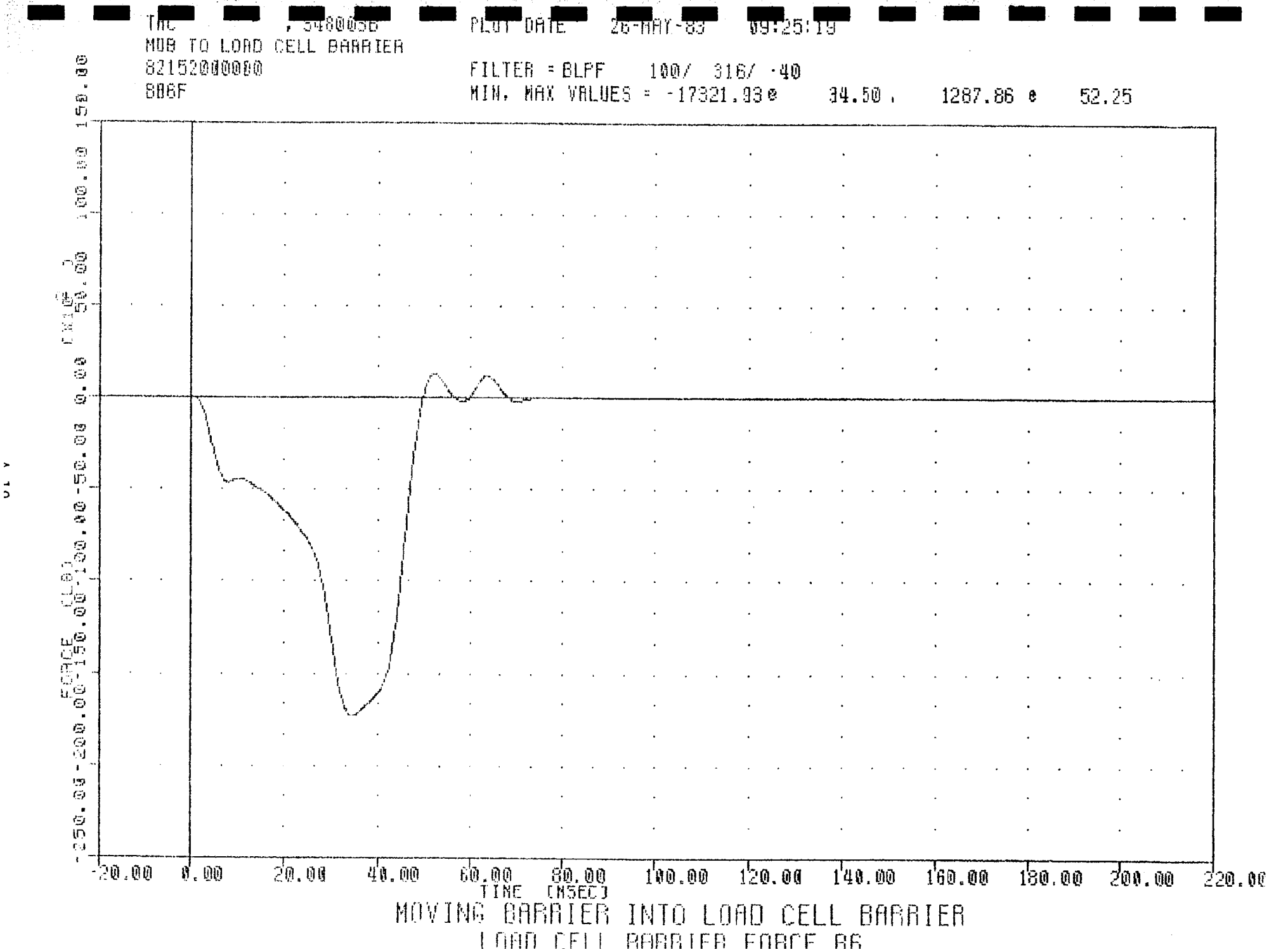
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE B4

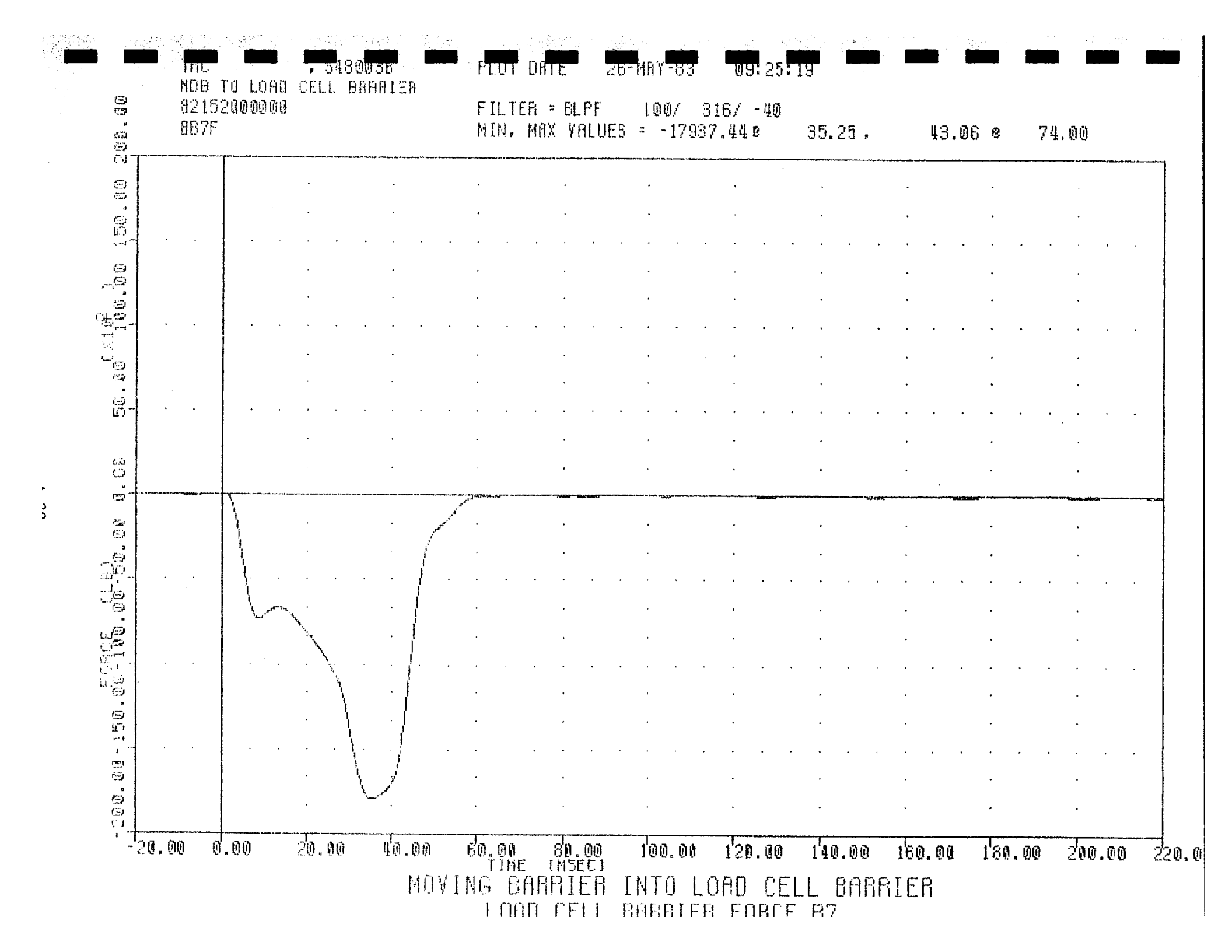
THC , 3480050 PLOT DATE 26-MAY-83 09:25:19
MOD TO LOAD CELL BARRIER
82152000000
BB5F

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -18125.80@ 34.63 , 135.12 @ 82.25

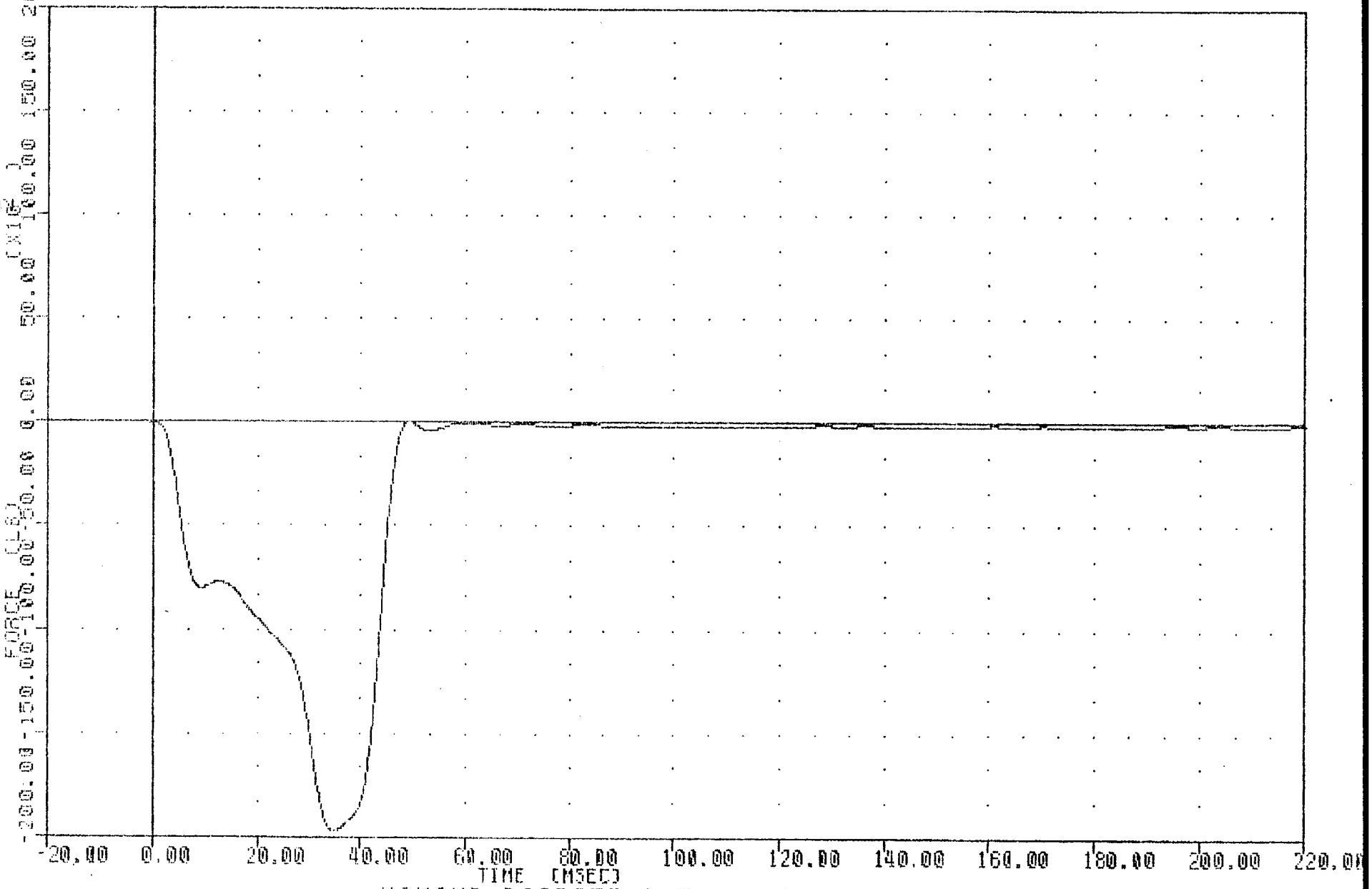


MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE A5


THC , 5480050
PLOT DATE 26-MAY-83 09:25:19
MOB TO LOAD CELL BARRIER
821520000000
FILTER = BLPF 100/ 316/ .40
886F
MIN, MAX VALUES = -17321.93 @ 34.50 , 1287.86 @ 52.25
FORCE (LB)
-250.00 -200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE 88


PLOT DATE 26-MAY-83 09:25:19
NOB TO LOAD CELL BARRIER
82152@00000
8B7F
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -17937.44 @ 35.25 , 43.06 @ 74.00
FORCE (LB) X10^2
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.0
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE B7

THC , 5480036 PLOT DATE 26-MAY-83 09:25:19
MDB TO LOAD CELL BARRIER
82152000000
BB8F
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -19717.75@ 34.75 , 72.52 @ -16.88



MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE BB

[redacted] , 5480058 PLOT DATE 26-MAY-83 09:25:19

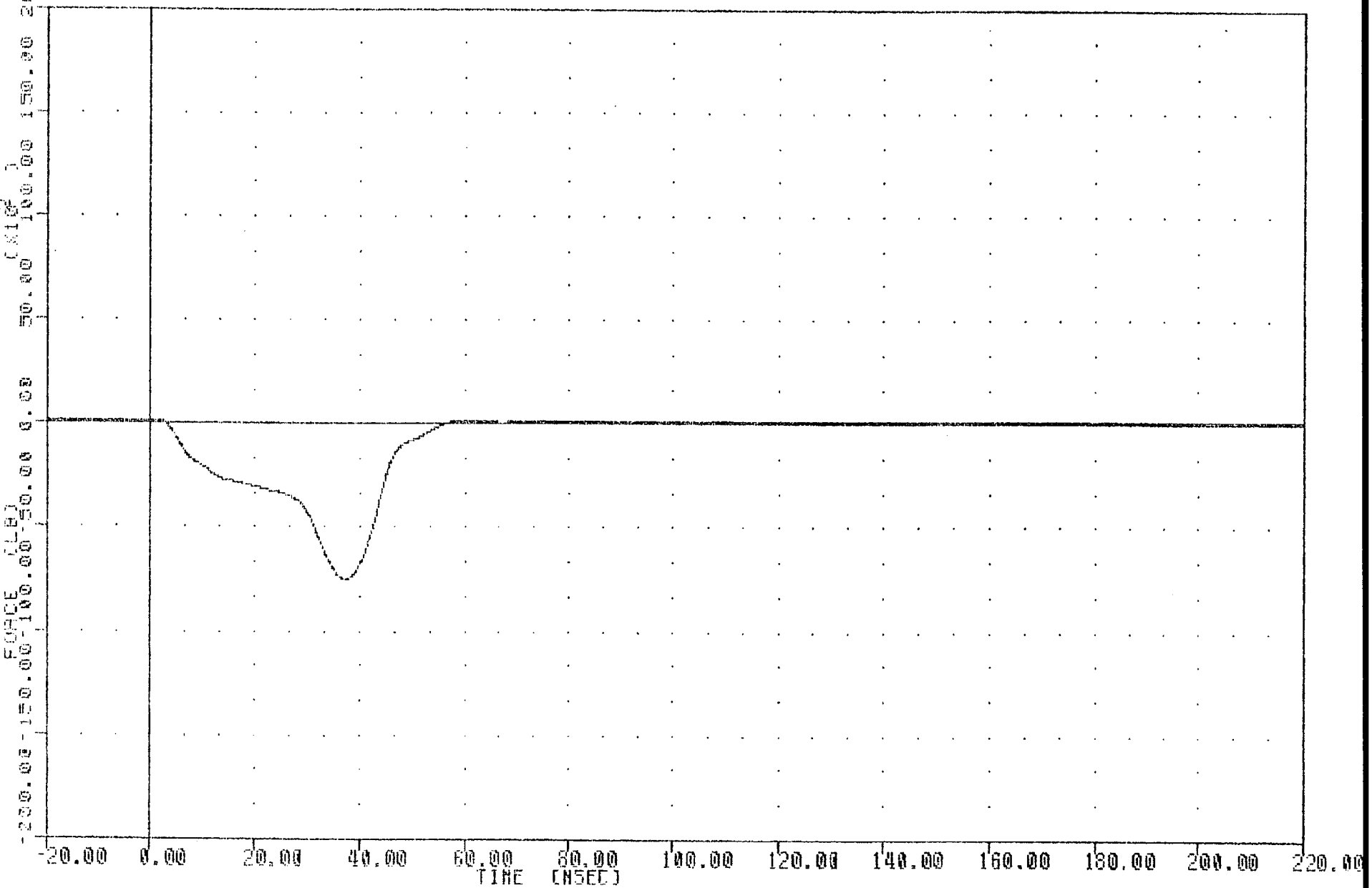
MOB TO LOAD CELL BARRIER

8215200000

B89F

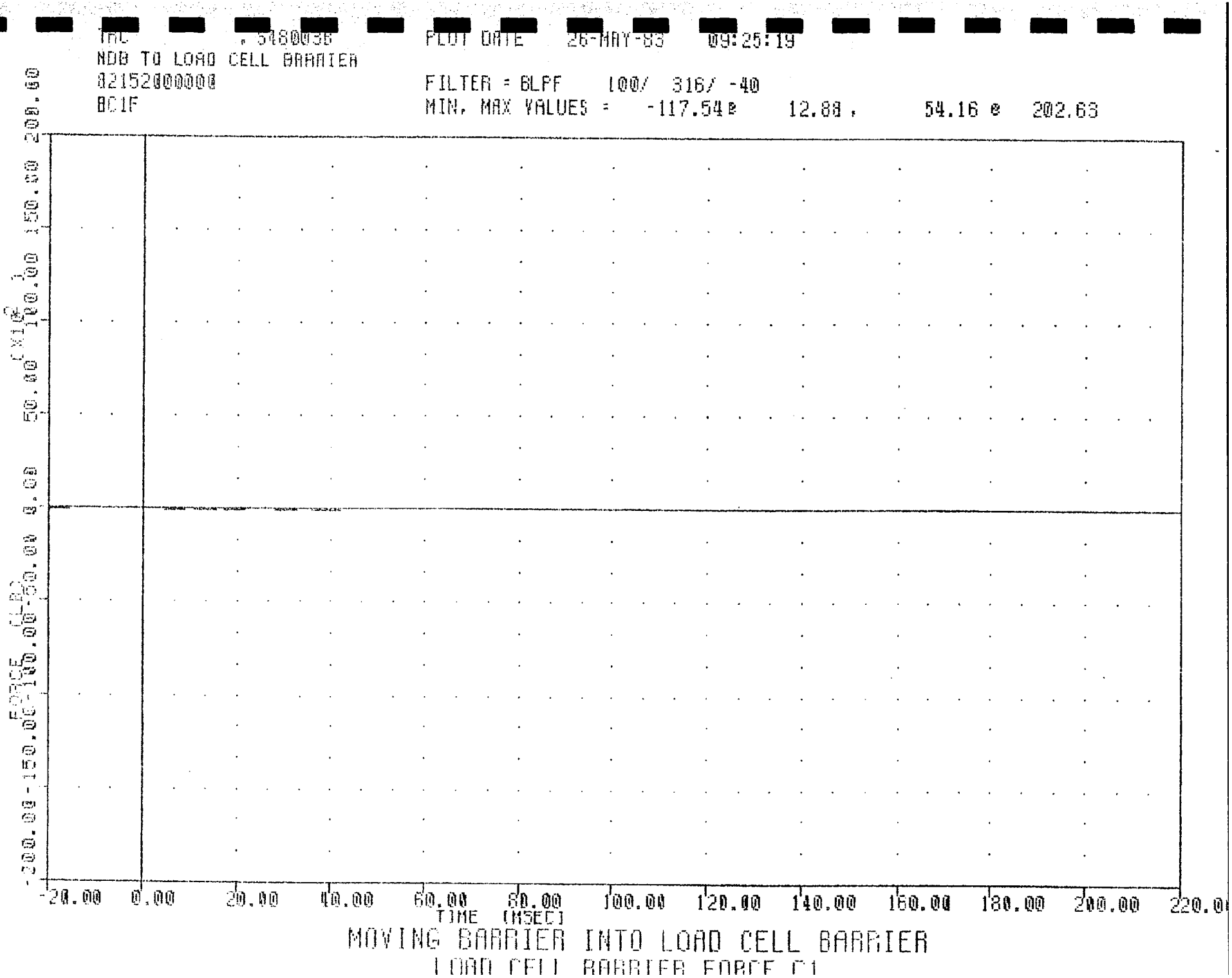
FILTER = BLPF 100/ 316/ -40

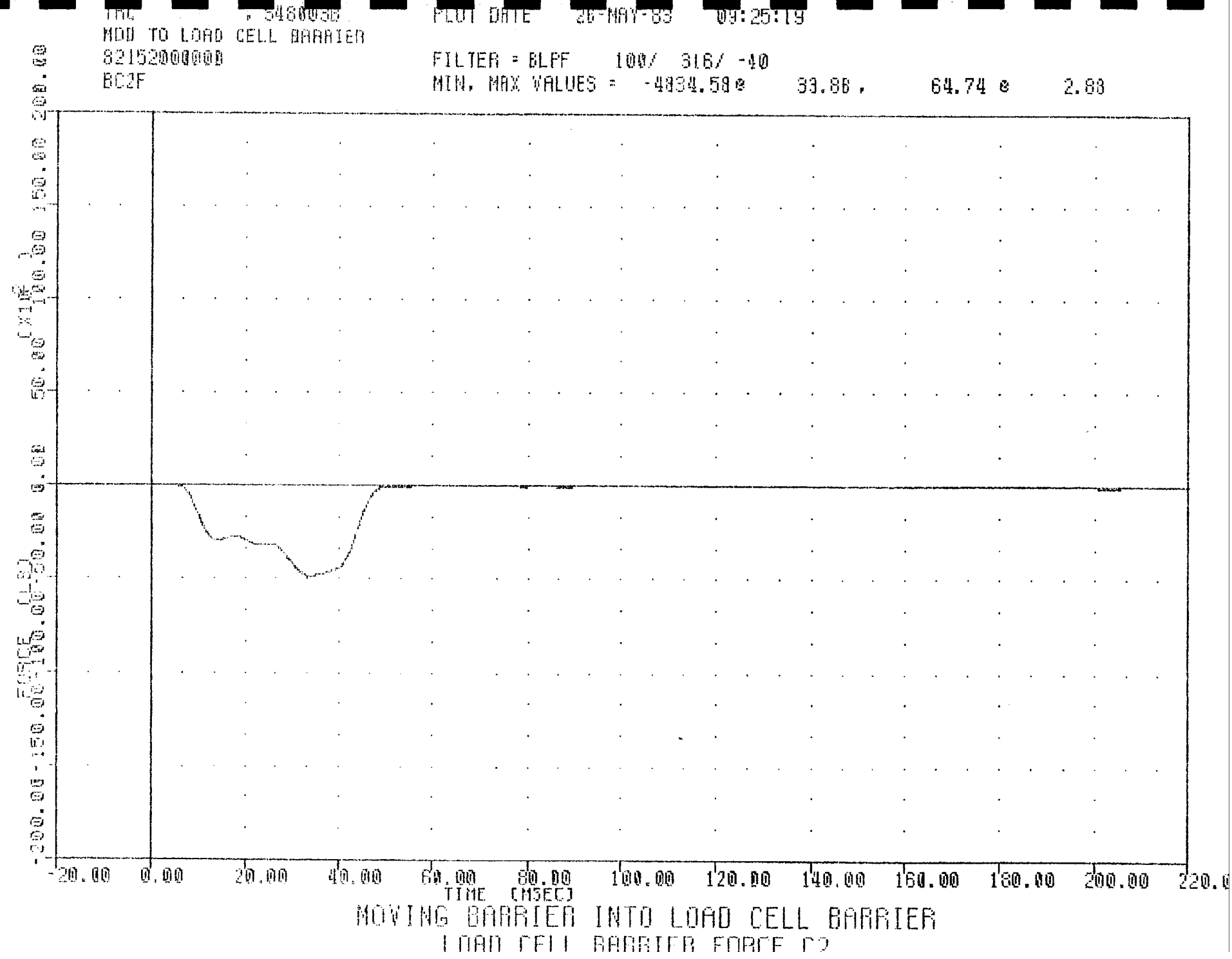
MIN, MAX VALUES = -7509.70 @ 37.13 , 179.16 @ 106.75

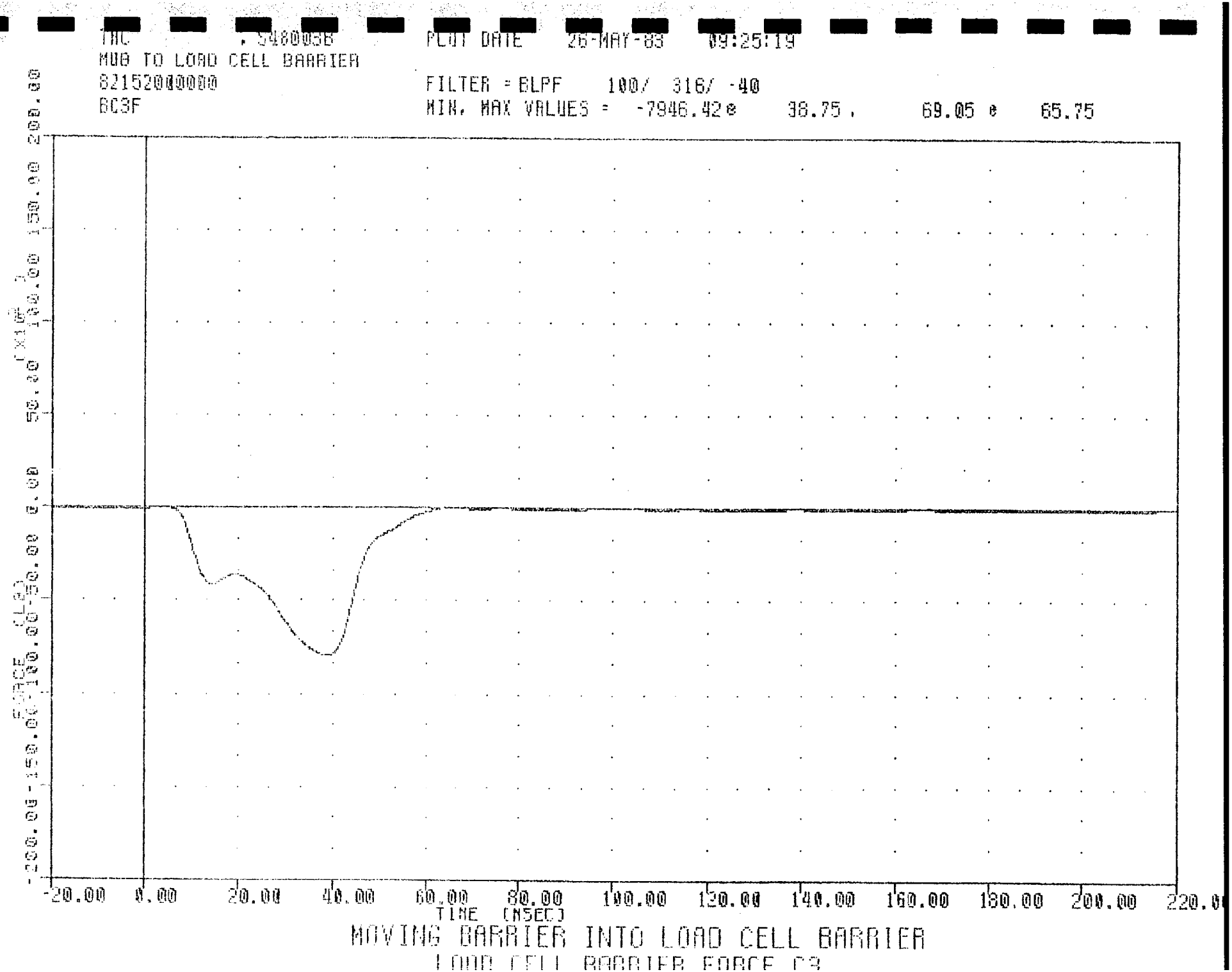


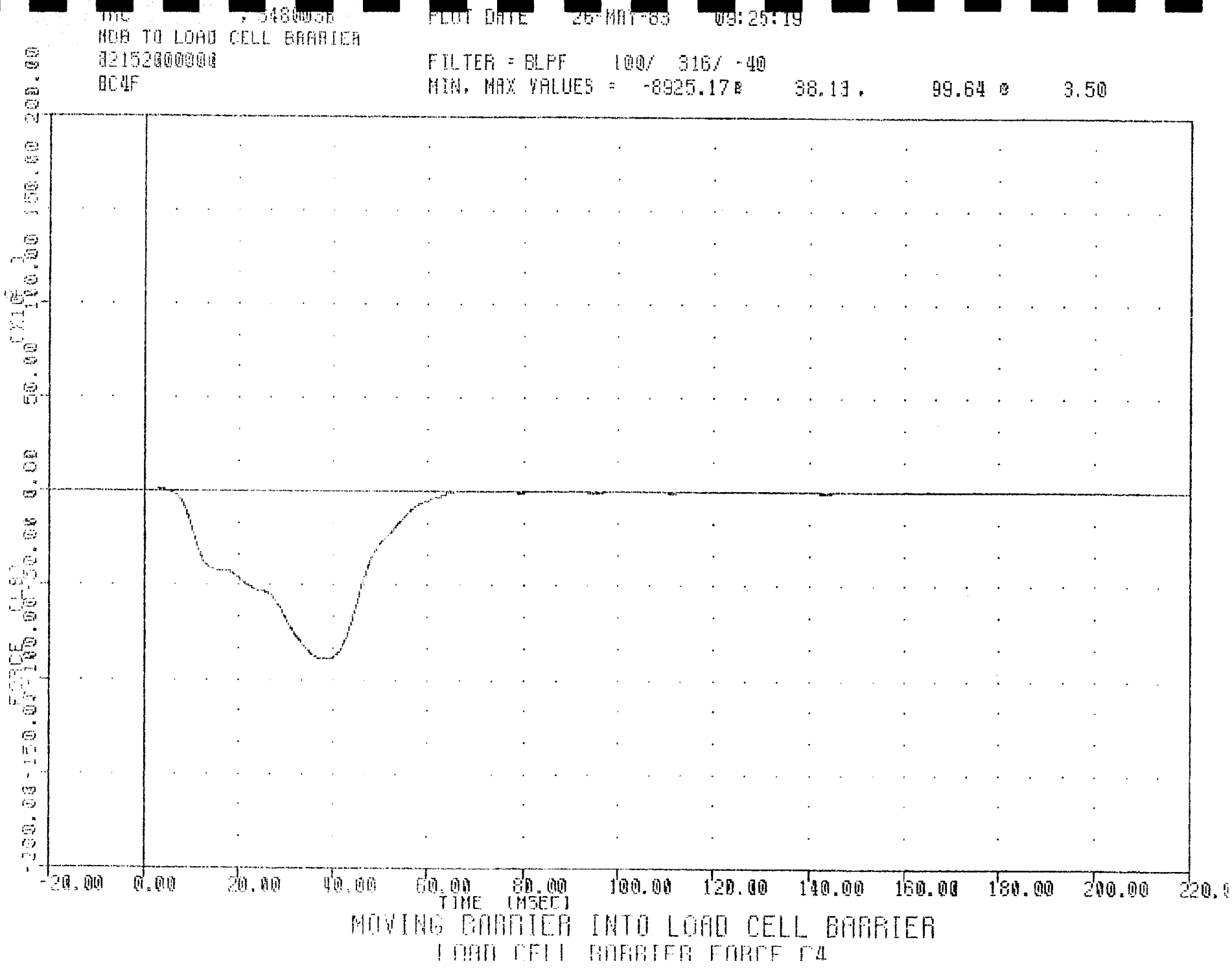
MOVING BARRIER INTO LOAD CELL BARRIER

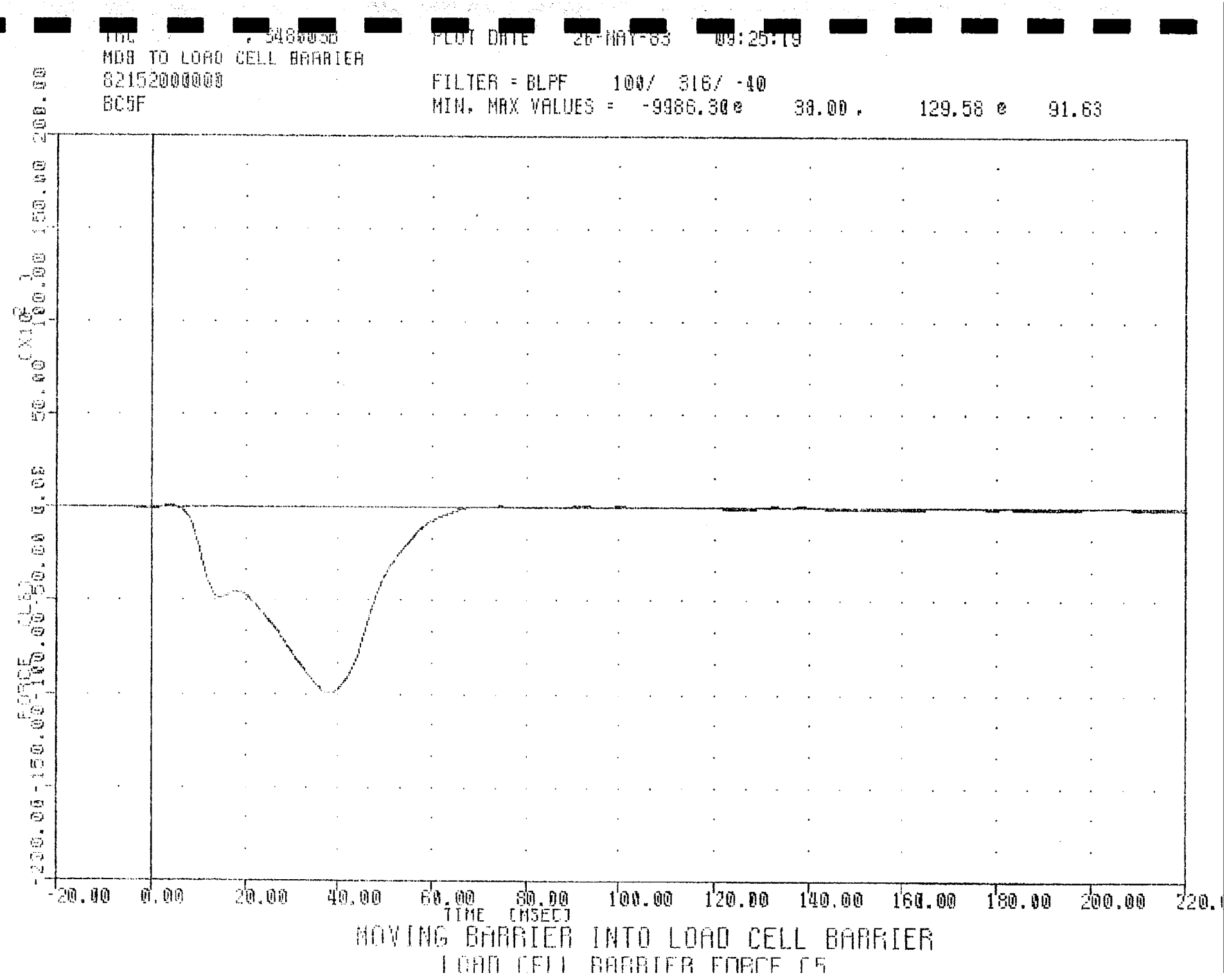
LOAD CELL BARRIER FORCE B9

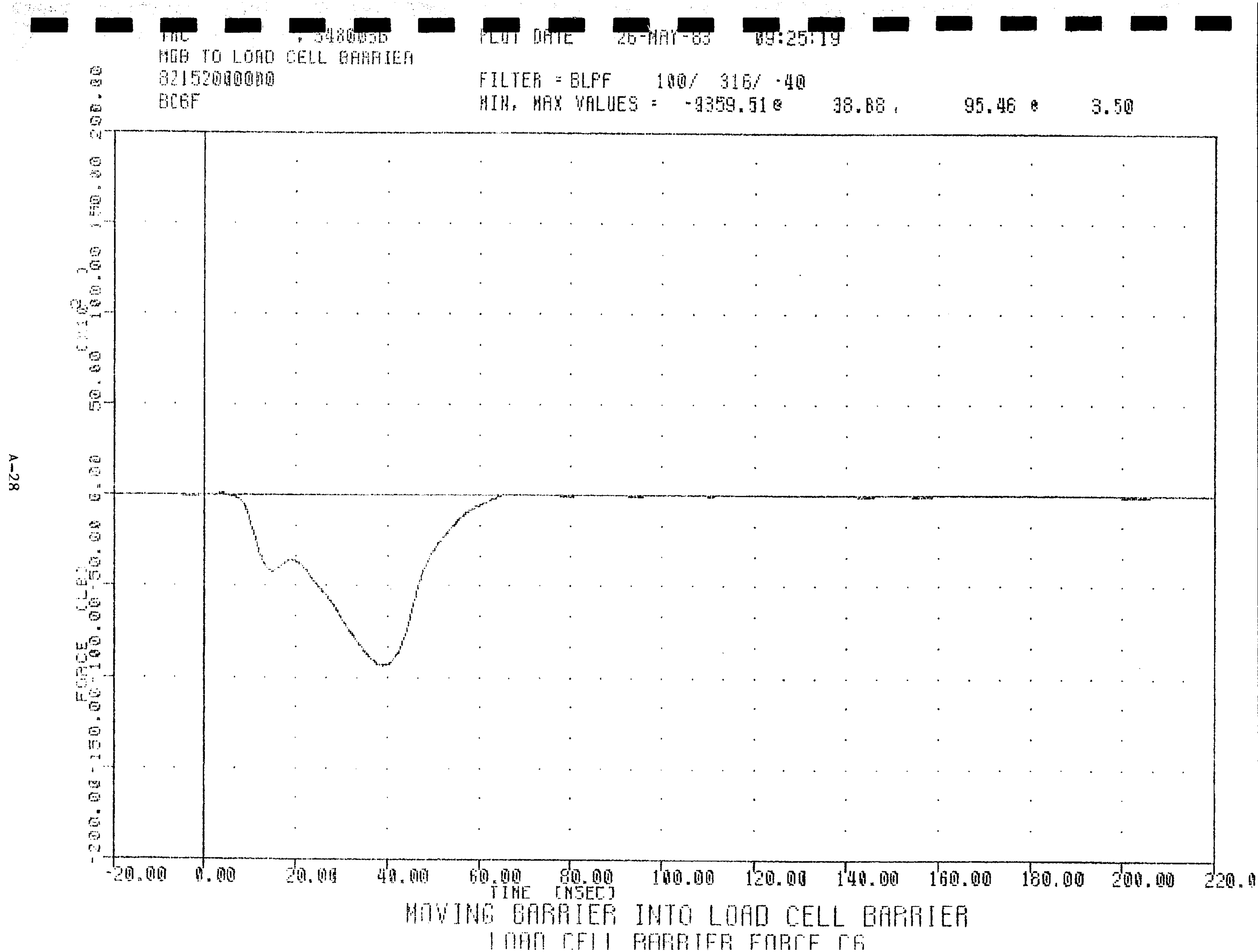

INC .5480036
PLOT DATE 26-MAY-83 09:25:19
NDB TO LOAD CELL BARRIER
8215200000
BC1F
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -117.54 @ 12.88 , 54.16 @ 202.63
FORCE (LBS)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C1

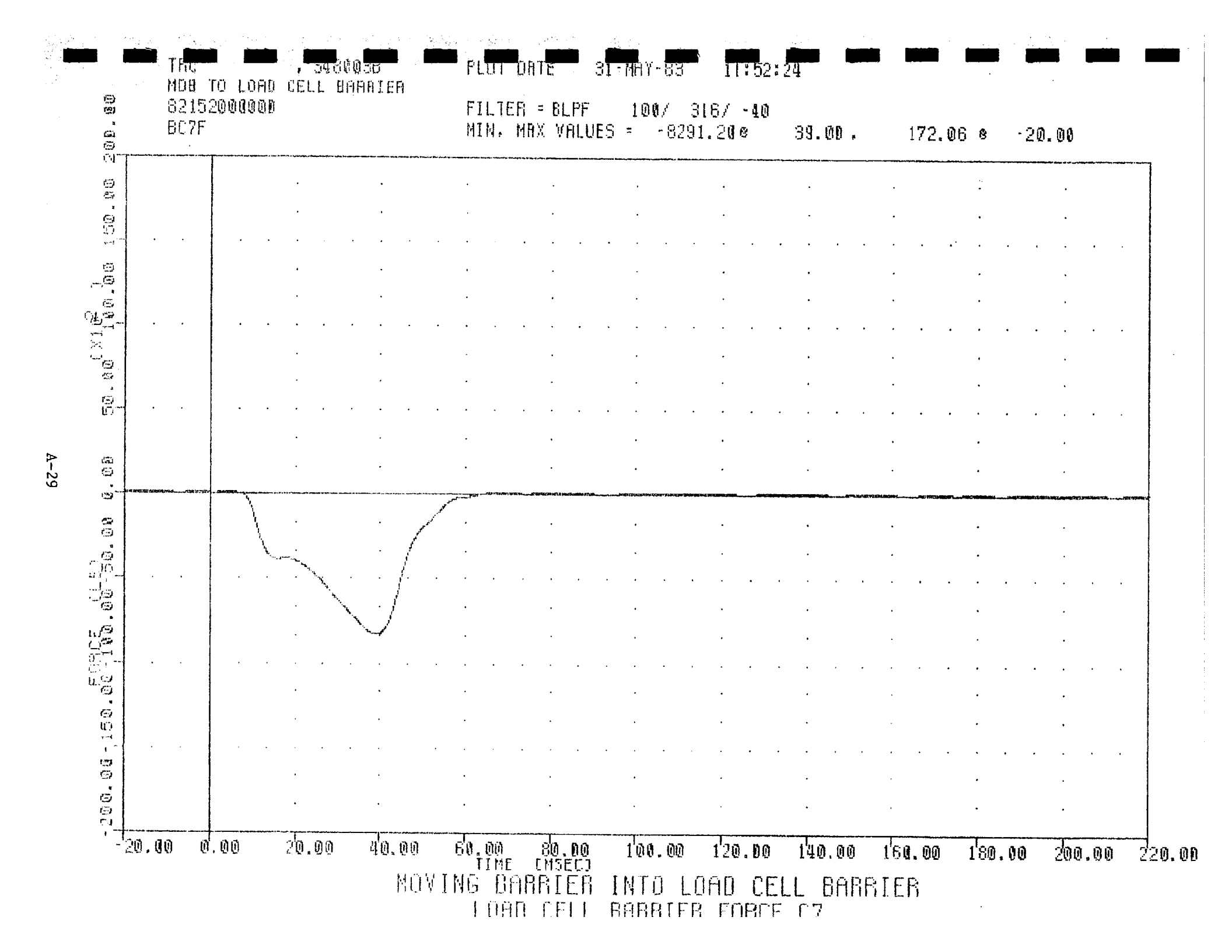

TRC , 5460050 PLOT DATE 26-MAY-83 09:25:19
MDB TO LOAD CELL BARRIER
8215200000B FILTER = BLPF 100/ 316/ -40
BC2F MIN, MAX VALUES = -4834.58 @ 33.86 , 64.74 @ 2.88
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
FORCE (LBS)
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.0
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C2

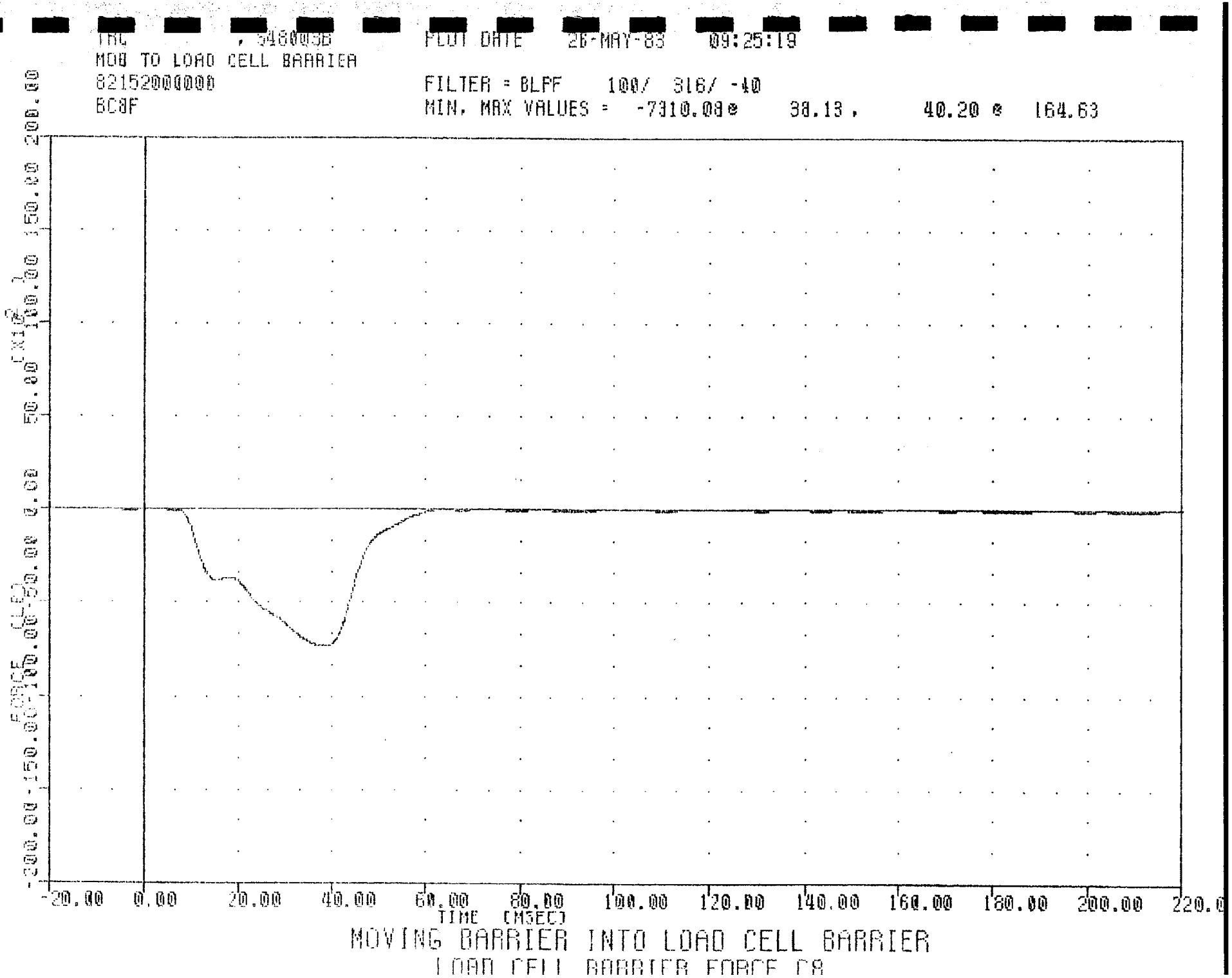

THC .5480058
PLOT DATE 26-MAY-83 09:25:19
MUB TO LOAD CELL BARRIER
821520000000
FILTER = BLPF 100/ 316/ -40
BC3F
MIN, MAX VALUES = -7946.42 @ 38.75 , 69.05 @ 65.75
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
FORCE (LB) (X10^3)
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C3

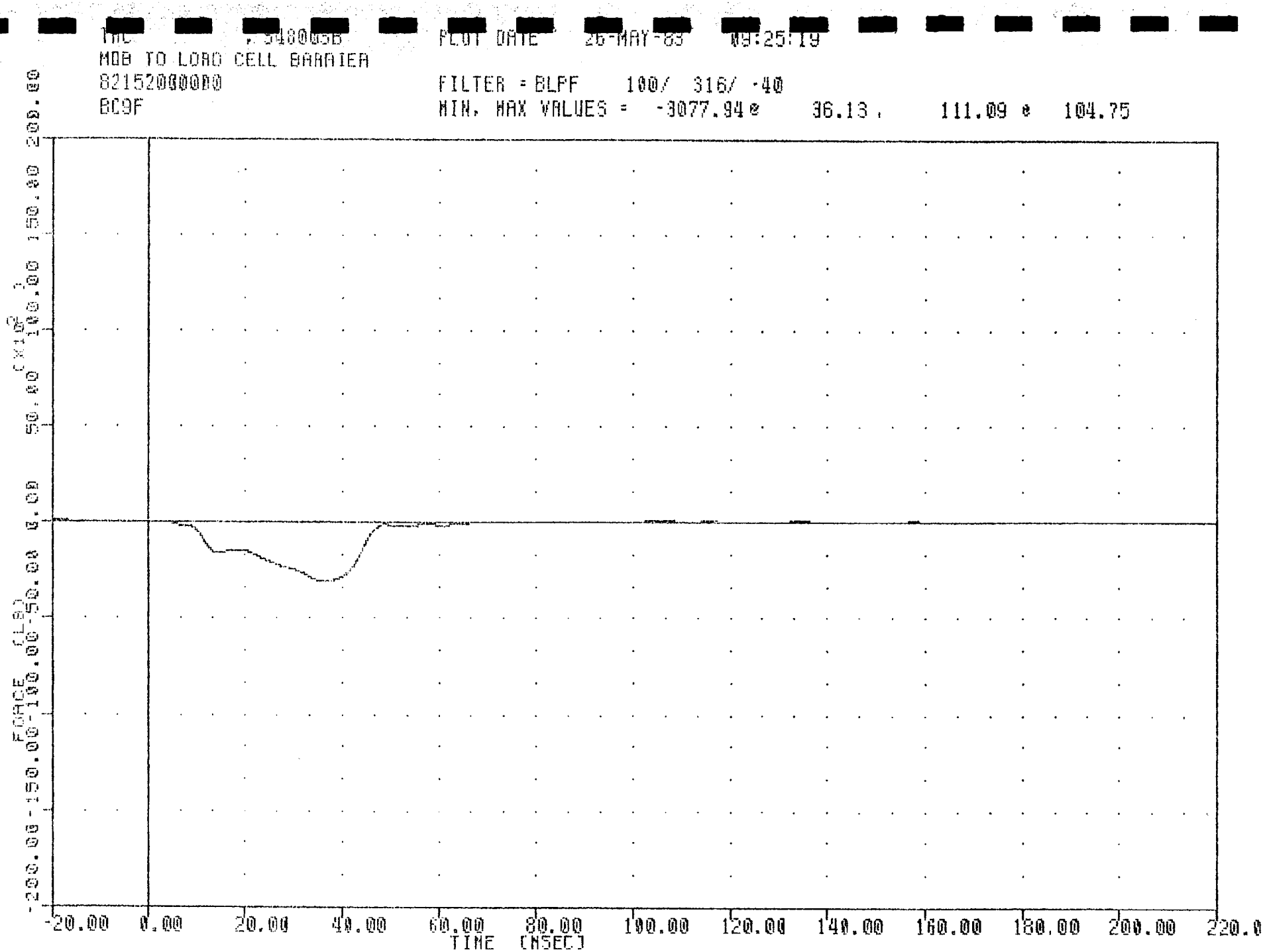

MDB TO LOAD CELL BARRIER
FILTER = BLPF
MIN, MAX VALUES =
FORCE (LB)
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C4


TMC . 5486030
PLOT DATE 26-MAY-83 09:25:19
MDB TO LOAD CELL BARRIER
8215200000B
FILTER = BLPF 100/ 316/ -40
BC5F
MIN, MAX VALUES = -9986.30 @ 38.00 , 129.58 @ 91.63
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
FORCE (LBS) (X10^3)
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C5


TRC , 5480056
MGB TO LOAD CELL BARRIER
82152000000
BC6F
PLOT DATE 26-MAY-83 09:25:19
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -9359.51 @ 38.88 , 95.46 @ 3.50
FORCE (LB)
TIME (MSEC)
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.0
-200.00
-150.00
-100.00
-50.00
0.00
50.00
100.00
150.00
200.00
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C6

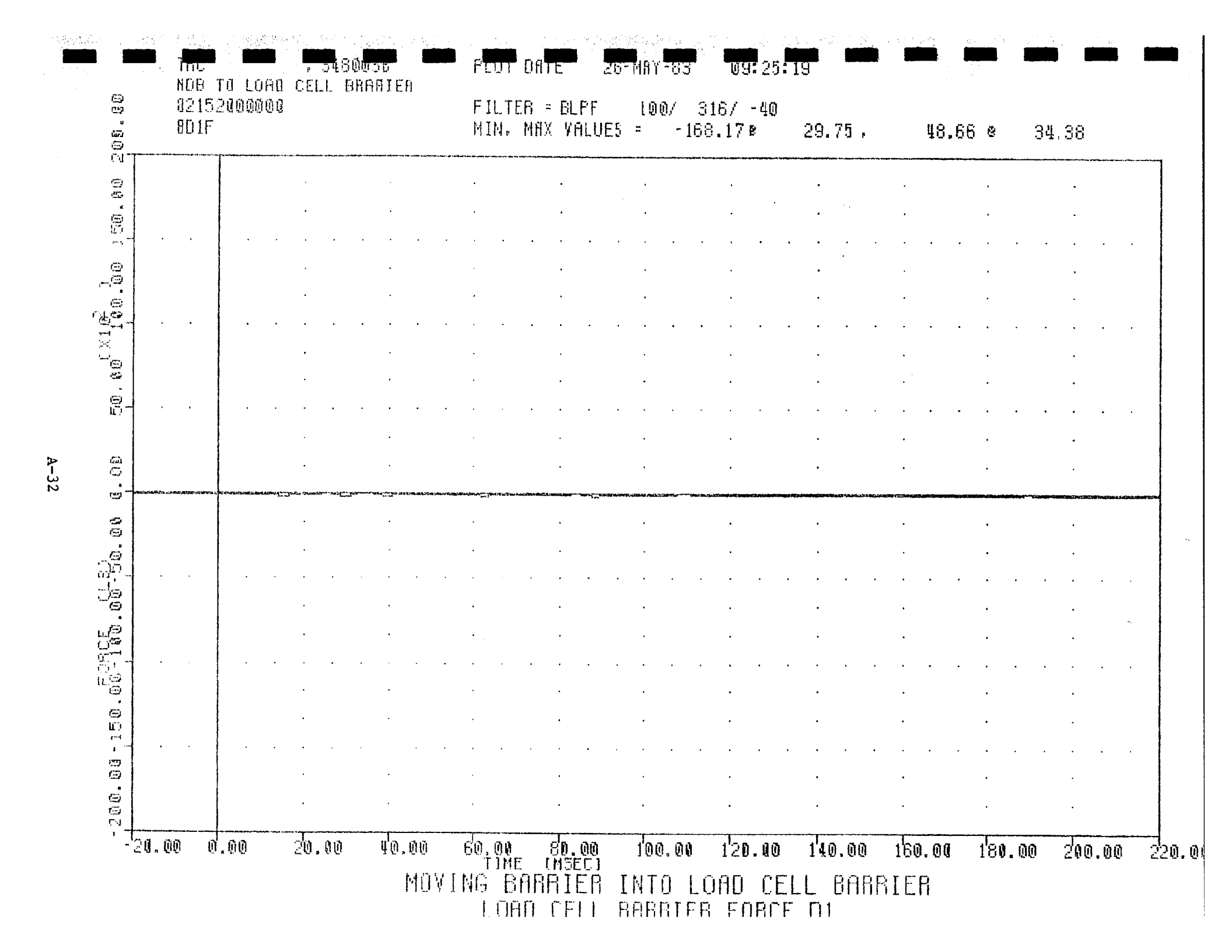

TRC , 5460030
PLOT DATE 31-MAY-83 11:52:24
MDB TO LOAD CELL BARRIER
8215200000
FILTER = BLPF 100/ 316/ -40
BC7F
MIN, MAX VALUES = -8291.20 @ 39.00 , 172.06 @ -20.00
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
FORCE (LB) (X1E2)
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE C7

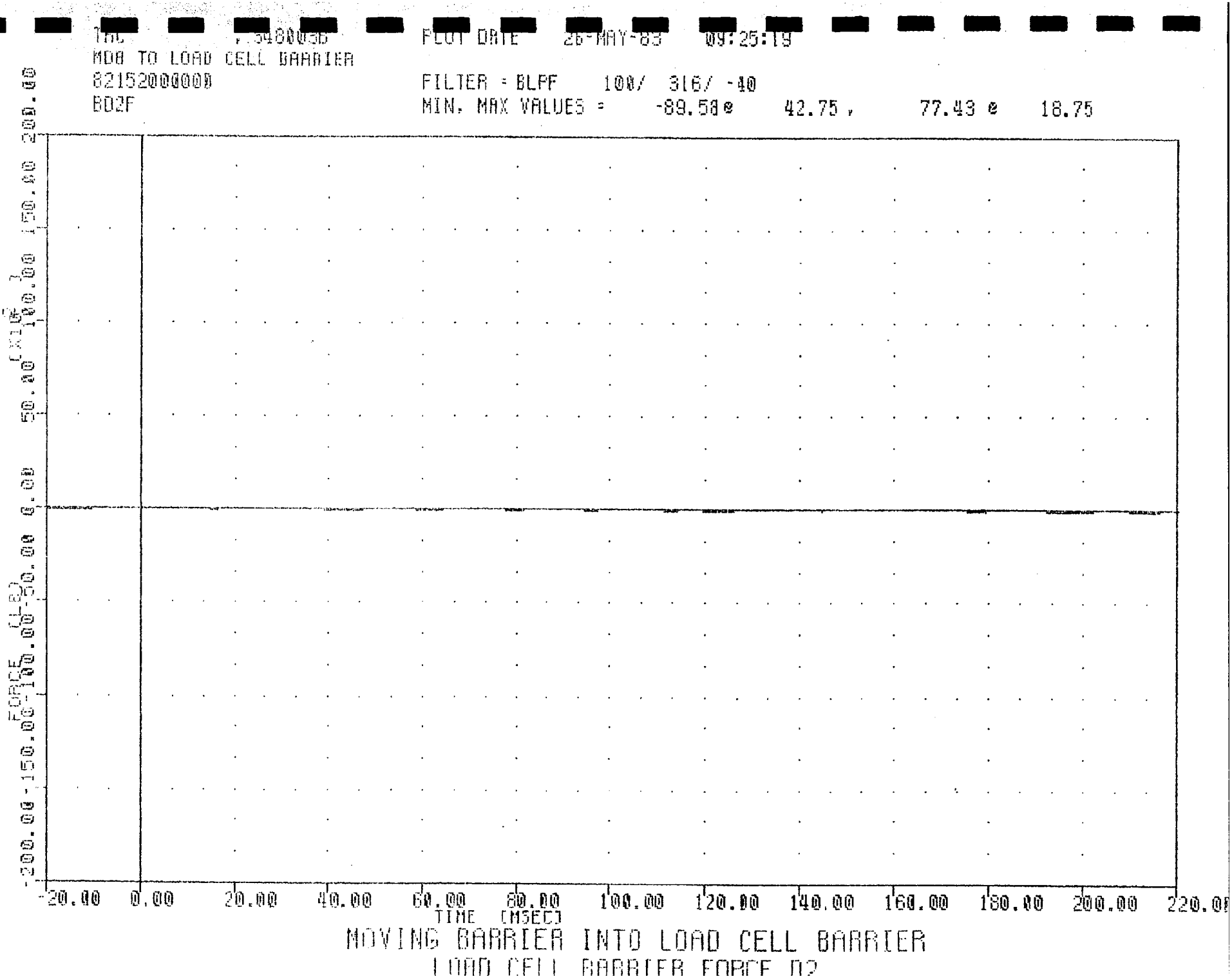

TRC , 5480058
MOB TO LOAD CELL BARRIER
8215200000
8C8F
PLOT DATE 26-MAY-83 09:25:19
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -7310.08 @ 38.13 , 40.20 @ 164.63
FORCE (LB) (X10^2)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.0
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE CR

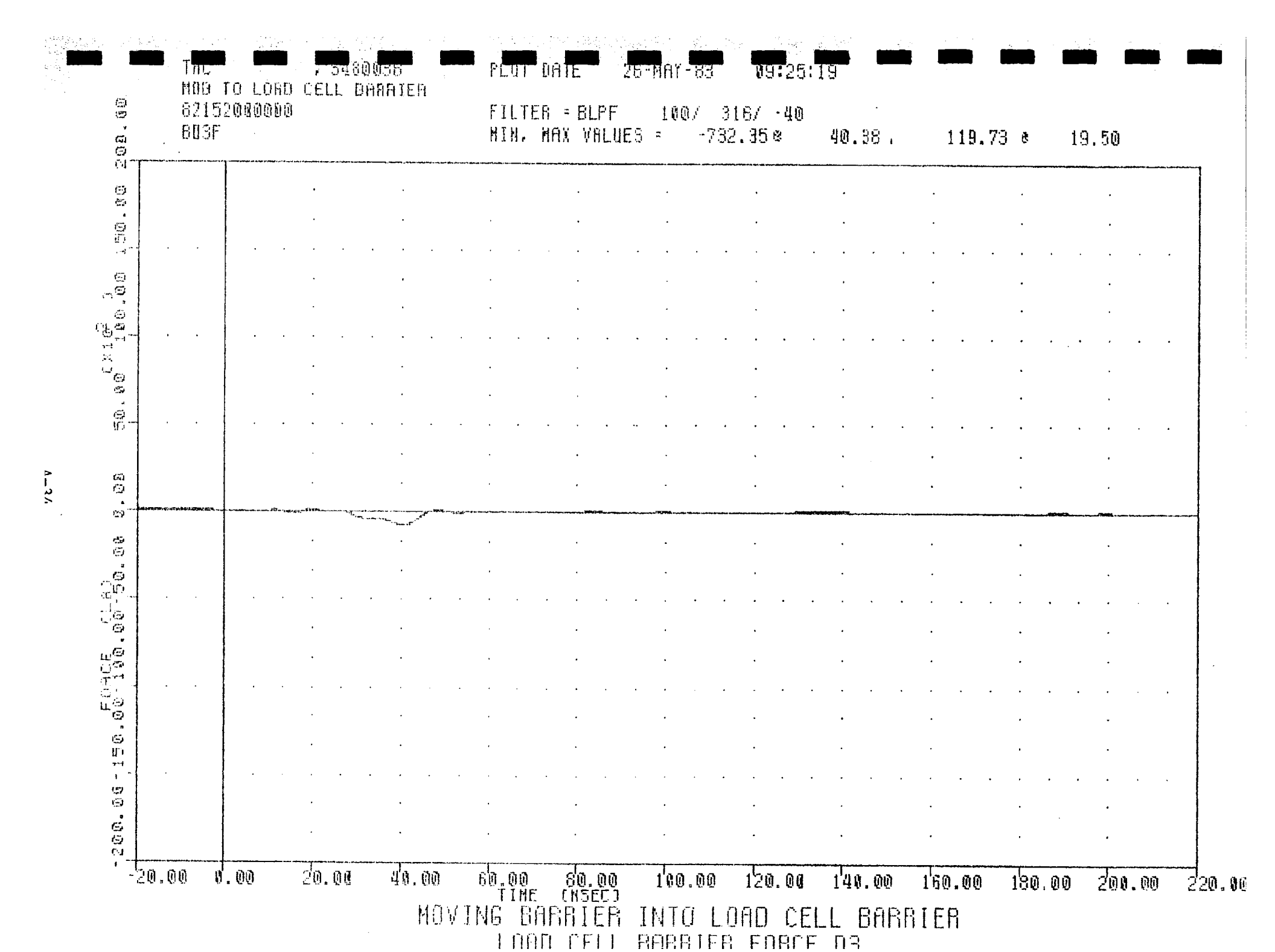


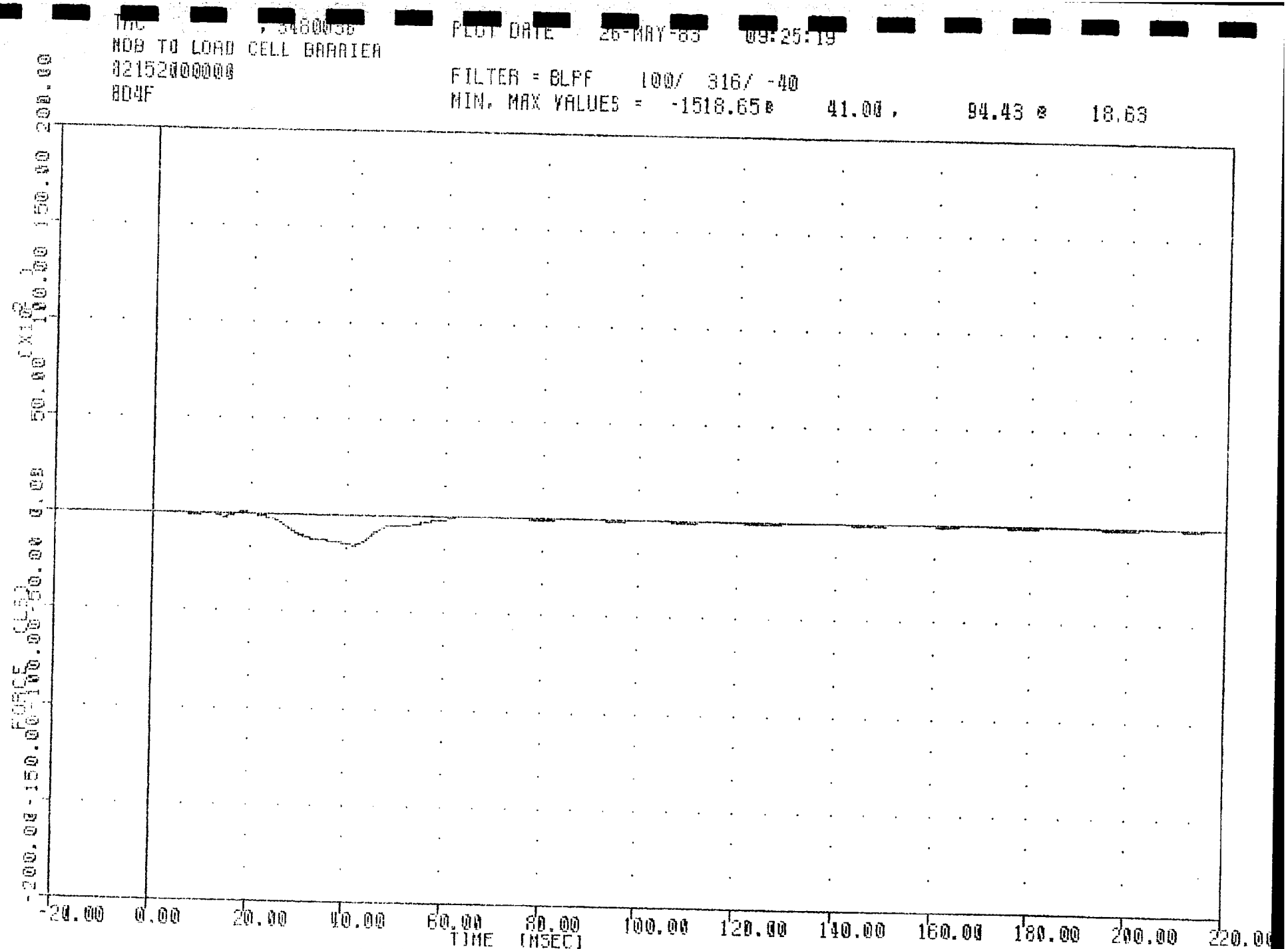
MOVING BARRIER INTO LOAD CELL BARRIER

LOAD CELL BARRIER FORCE C9


TEC , 5480056
PLOT DATE 26-MAY-83 09:25:19
NOB TO LOAD CELL BRARIER
02152000000
8D1F
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -168.17 @ 29.75 , 48.66 @ 34.38
FORCE (LB)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
(X10)
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE D1

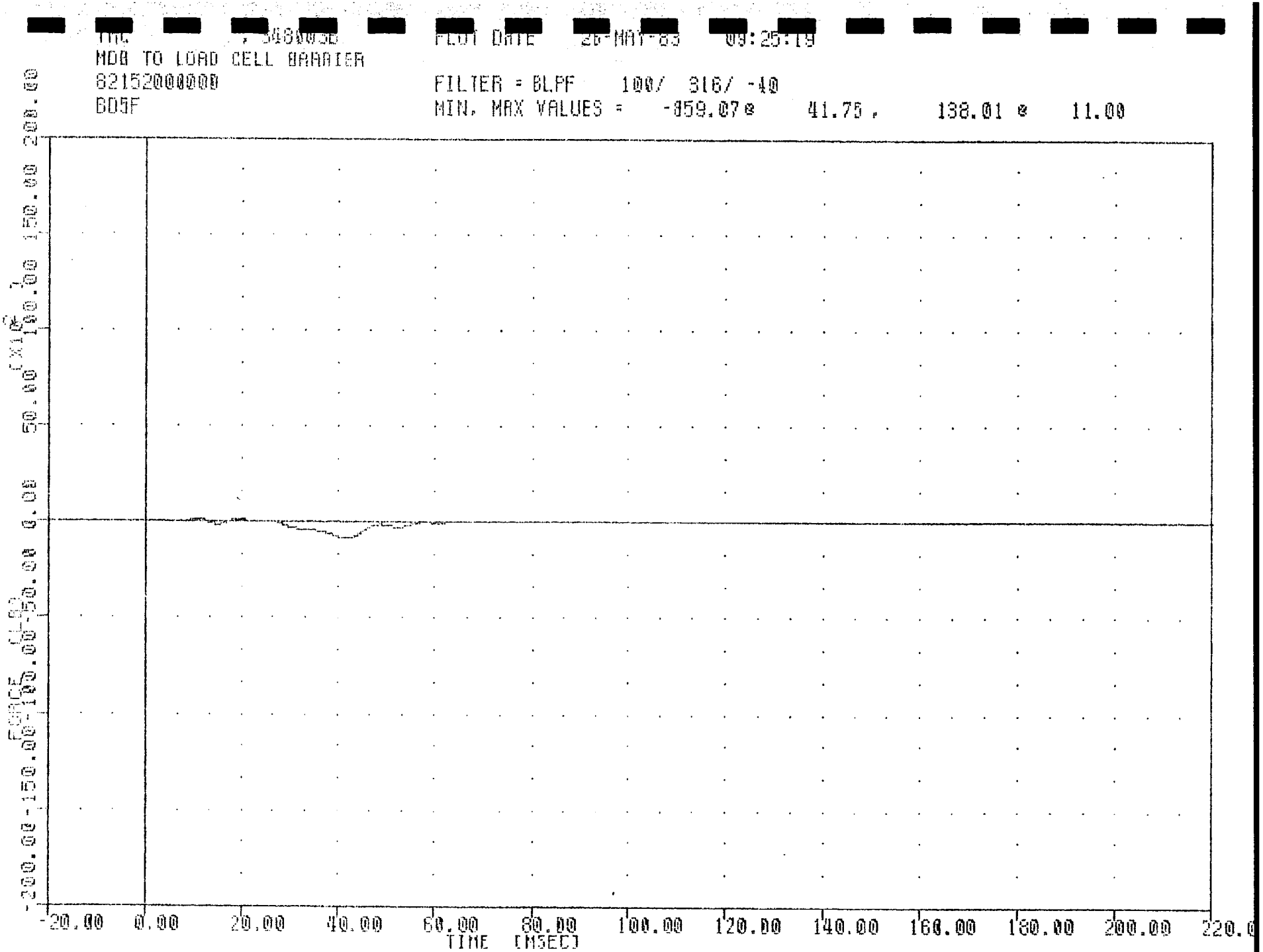

TAC .5480050
PLOT DATE 26-MAY-83 09:25:19
MDB TO LOAD CELL BARRIER
82152000000
FILTER = BLPF 100/ 316/ -40
BD2F
MIN, MAX VALUES = -89.58 @ 42.75 , 77.43 @ 18.75
FORCE (LB) (X10^3)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE D2


TMC , 5480056
PLOT DATE 26-MAY-83 09:25:19
MOB TO LOAD CELL BARRIER
62152000000
FILTER = BLPF 100/ 316/ -40
B03F
MIN. MAX VALUES = -732.35 @ 40.38 , 119.73 @ 19.50
FORCE (LB) (X10^2)
-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00
-20.00 0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00
TIME (MSEC)
MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE 03



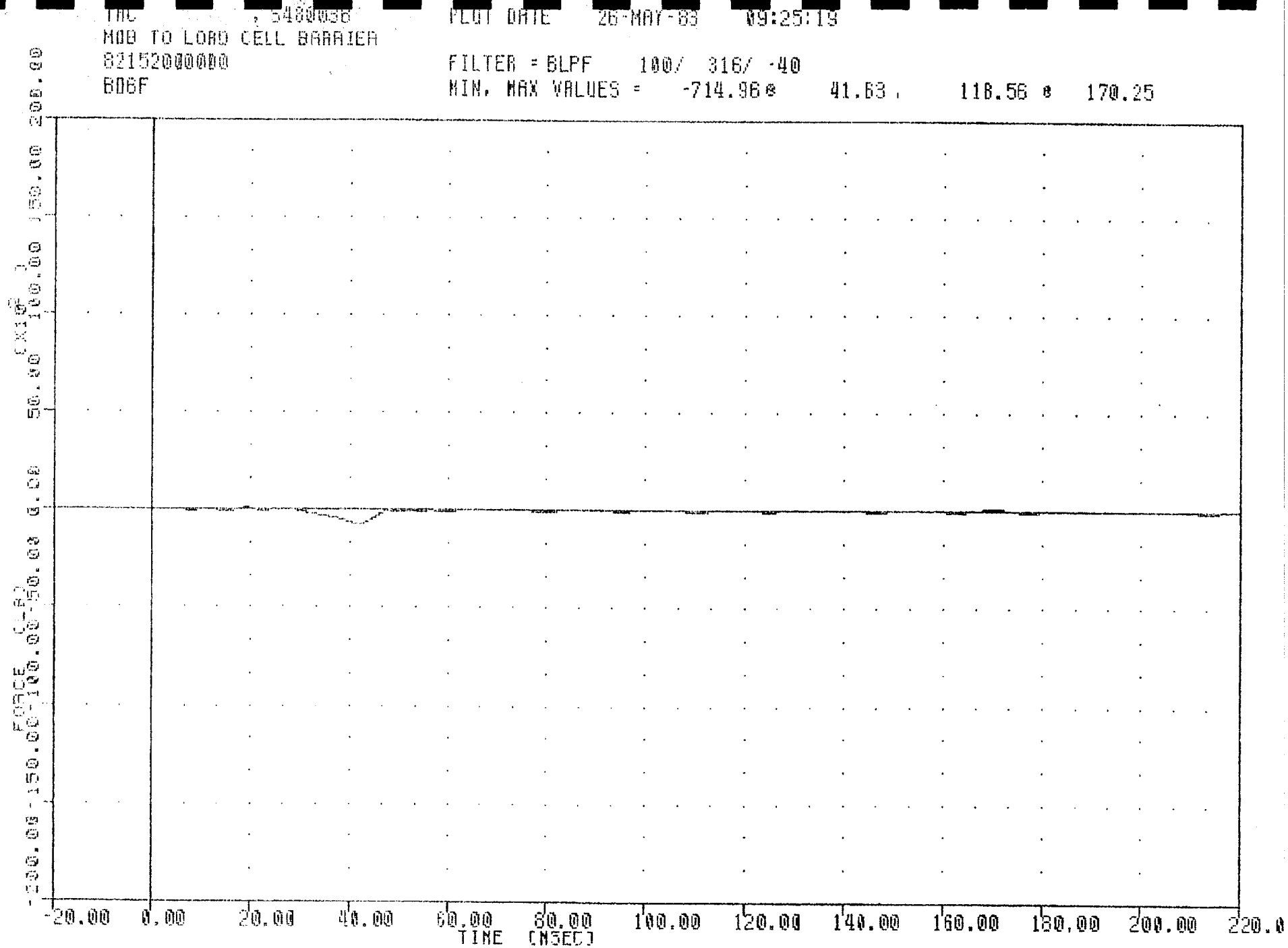
MOVING BARRIER INTO LOAD CELL BARRIER

LOAD CELL BARRIER FORCE D4



MOVING BARRIER INTO LOAD CELL BARRIER

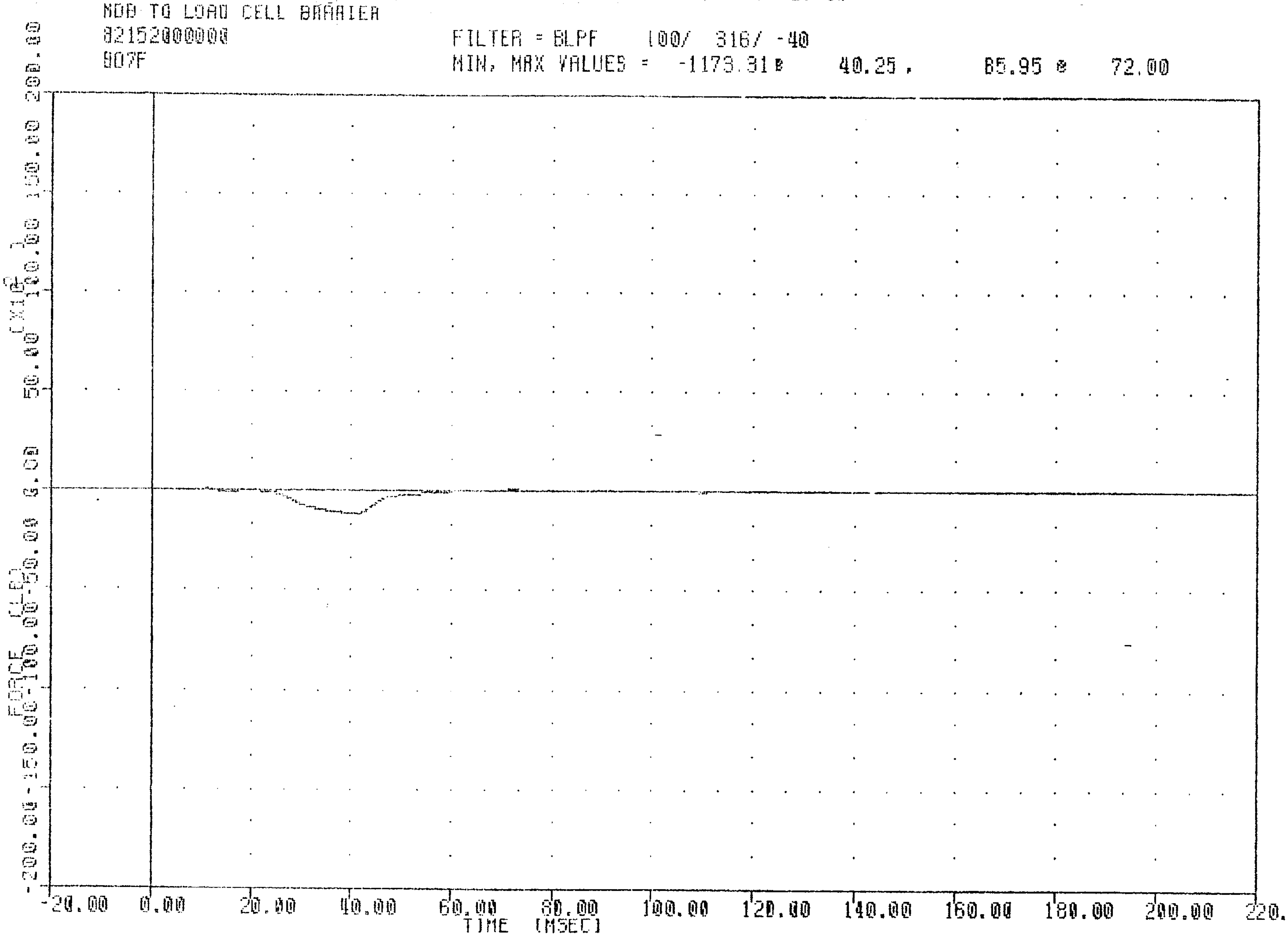
LOAD CELL BARRIER FORCE D5



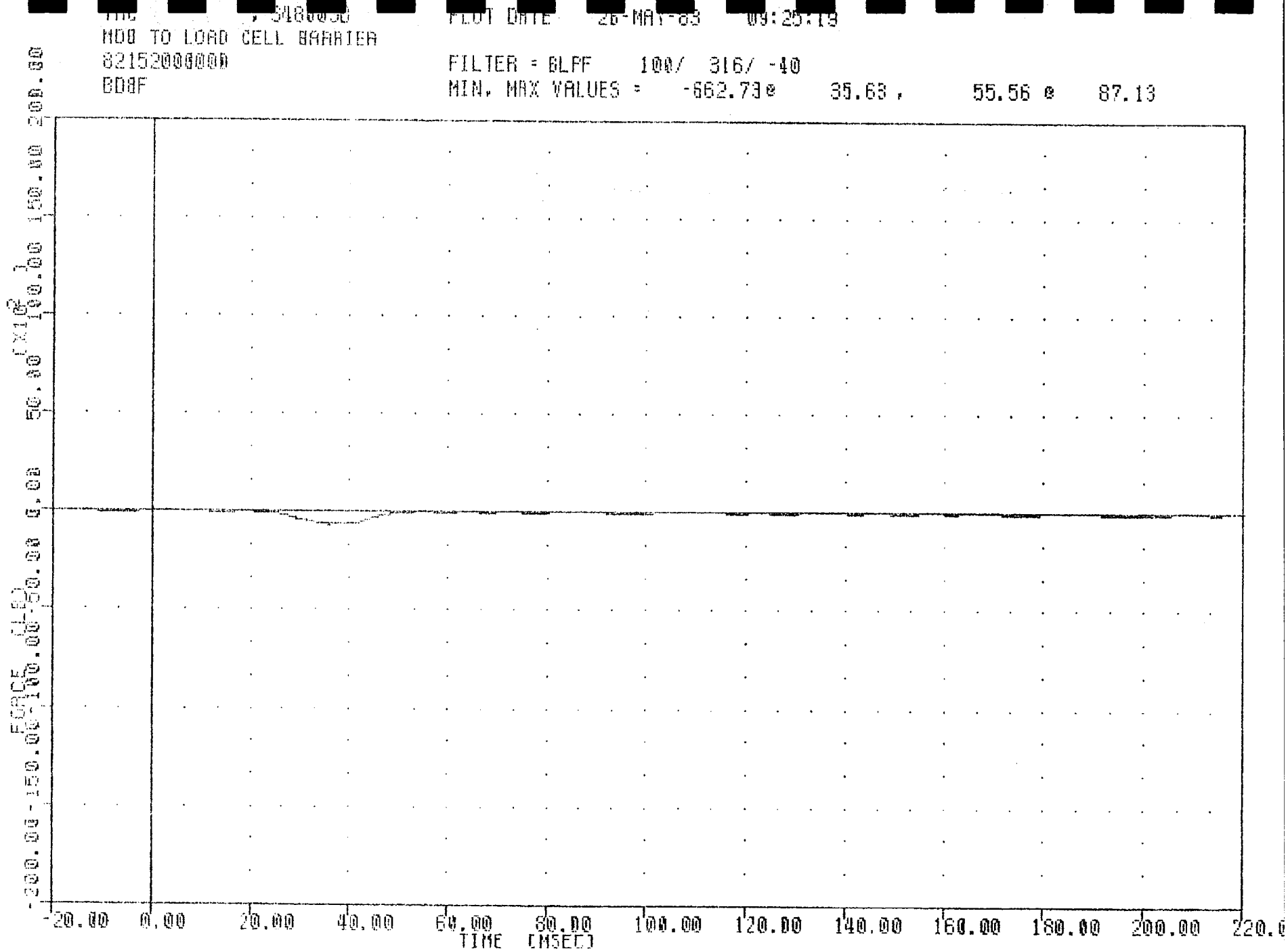
MOVING BARRIER INTO LOAD CELL BARRIER

LOAD CELL BARRIER FORCE DA

TRC , 5480038 PLOT DATE 26-MAY-83 09:25:19
MDB TO LOAD CELL BARRIER
82152000000 FILTER = BLPF 100/ 316/ -40
907F MIN, MAX VALUES = -1173.31 @ 40.25 , 85.95 @ 72.00

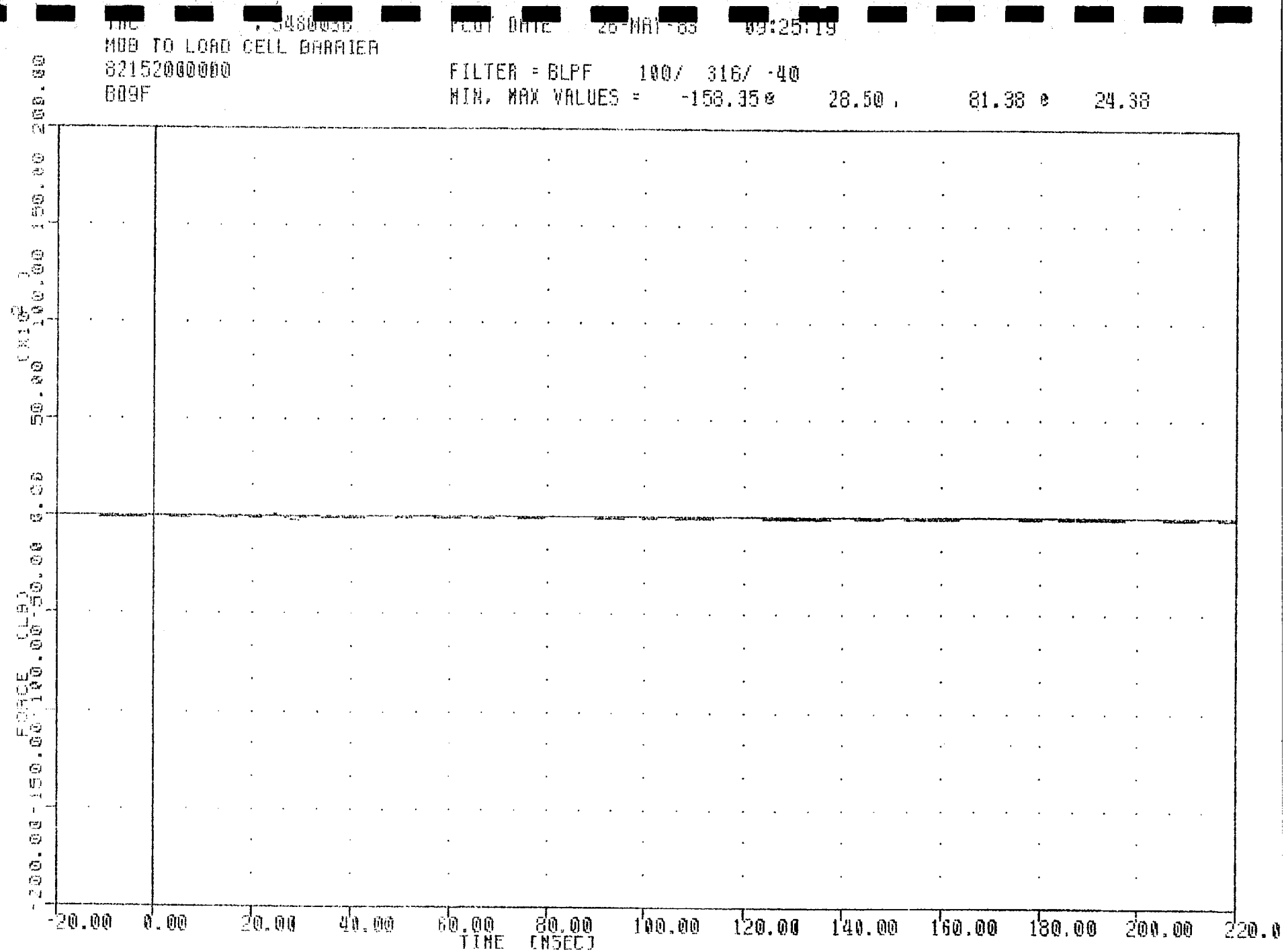


MOVING BARRIER INTO LOAD CELL BARRIER
LOAD CELL BARRIER FORCE D7



MOVING BARRIER INTO LOAD CELL BARRIER

LOAD CELL BARRIER FORCE DA



MOVING BARRIER INTO LOAD CELL BARRIER

LOAD CELL BARRIER FORCE 09