PRELIMINARY FLIGHT SUMMARY

FTV-1135 CM-15

F.T.V.-1135 was launched from Vandenberg Air Force Base at 2:00 PM PST on 11/24/62 and became the first 5 day mission recorded on the Corona Program. CM-15 was the primary payload aboard. Ascent into orbit was normal in all aspects. The following orbital parameters were achieved:

TABLE I

ORBITAL PARAMETERS (ORBIT 29)

	Nominal	Actual
Period (min.)	89.93	89.98
Apogee (N.M.)	183.88	184.00
Perigee (N.M.)	113.11	114.00
Eccentricity	0.0099	.010
Inclination (Deg.)	64.87	65.17
Argument of Perigee	155.71	151.08

Instrument Operation

Paroramic Instruments: Both panoramic instruments operated throughout the flight. The cycle period of instrument No. 1 was very close to the pre-flight nominal cycle period. Instrument No. 2 ran approximately 2% slower than the pre-flight nominals over the entire flight. Instrument No. 2 was observed to be running approximately 1.5% slower than instrument No. 1 on the engineering passes on Orbits 41 and 57, and seemed to slow down even more on the last day of the mission. Good I.M.C. match was obtained by using ramps 3, 5 and 10 throughout the flight.

A slit width of 0.200 inches and a Wratten 21 (orange) filter was used on both panoramic instruments. The horizon optics were set at 1/100 th of a second exposure time, with an aperture setting of F 6.8 and a Wratten 25 (red) filter on both instruments.

No instrument dynamic problems were apparent on the telemetry data.

Stellar Index Unit

Stellar Index serial No. D7/7/7 was flown in conjunction with CM-15. The Stellar Index Unit or instrumentation had apparently failed sometime prior to Orbit 41, the first instrument operation observed on telemetry.

Clock Operation

Two segments of clock operation were observed during the flight; one on Orbit 41 and one on Orbit 57. The clock had gained 17 milliseconds between these two orbits. Time correlation should be acceptable.

Temperature Environment

The 65 degree orbit inclination flown on this flight caused the largest on-orbit thermal variability yet encountered on a GM mission. The relatively early launch window provides additional large variabilities in the space thermal environment. The combination of launch window and thermal control mosiac was designed to give a minimum stovepipe temperature of 70 degrees.

The launch window was from 2:00 to 2:40 PM. During this time the Beta angle was increasing 14 degrees per hour. The launch time of 2:00 PM which was the beginning of the launch window gave a first orbit Beta angle of 54 degrees decreasing to 34 degrees by orbit 81, thus providing the lowest possible design temperatures.

The thermal control mosiac was a basic DOW 17-Gold stripe configuration with white Kemaeryl Lacquer applied as follows:

1. Twenty-five (25) 0.9 inch wide stripes covering 95 degrees of the vehicle circumference on the sun side. Seven (7) of these stripes were on each barrel with 11 stripes on the fairing.

2. Seven (7) stripes 0.9 inch wide under the clock.

   Note: Three of the paint stripes on barrel No. 2 and two of the stripes on barrel No. 1 were covered with 2 inch wide aluminized glass cloth over 280 degrees of the vehicle circumference.

The average stovepipe temperatures observed during the flight were 71 degrees and 67 degrees for instruments 1 and 2 respectively. Enclosure I is a plot of temp sensors 11 and 13 temperatures for the flight. Temp sensor No. 12 for instrument No. 2 was recorded during the flight for readout on selected orbits. This data is not available at this time.

The main instrument temperatures had stabilized by Orbit 9 and changed very little throughout the flight. Enclosure II is a tabulation of the in-flight temperatures.

Pirani Gage

The pirani gage flown to monitor internal pressure appeared to be functioning properly throughout the flight. The pressure had decreased to 400 microns by 500 seconds after liftoff. At telemetry acquisition at [redacted] on Orbit 1, the instruments had just turned off after operating for 24 cycles each. The pressure at this time was 87 microns. During the telemetry acquisition, (420 seconds) the pressure decreased to 61 microns. Enclosure III is a plot of the pressure during this acquisition. By the telemetry acquisition at [redacted] on Orbit 2 the pressure had decreased to 37 microns and continued to decrease throughout the flight. Enclosure IV is a plot of the pressure as observed on telemetry for the flight. Enclosure V is a plot of the pressure during the two engineering operations monitored during the flight. Pressure

[redacted]

values below 1 Microns were obtained by [redacted] calibration curve below the point of actual calibration and are therefore questionable.

Enclosure VI is a plot of the pirani gage calibration used on this flight.

The pirani gage output was recorded during the flight and played back during selected telemetry acquisitions. This data is not available at this time.

Recovery System Performance

A successful air catch recovery was made on Orbit 81, thus ending the first 5 day mission of the program. The impact point was approximately 200 miles down-range from the predicted impact point (approximately 30 nautical miles from the tracking station at [redacted].

Due to the low inclination of the orbit, the retro events were not monitored at the [redacted] tracking station. The cause of the overshoot cannot be stated at this time.

The overall condition of the recovered capsule was good with the heat damage limited to a paint blister in the +X quadrant of the cover and around the flasher. Enclosure VII shows the location of the temp plates and the temperatures encountered during re-entry.

[redacted]

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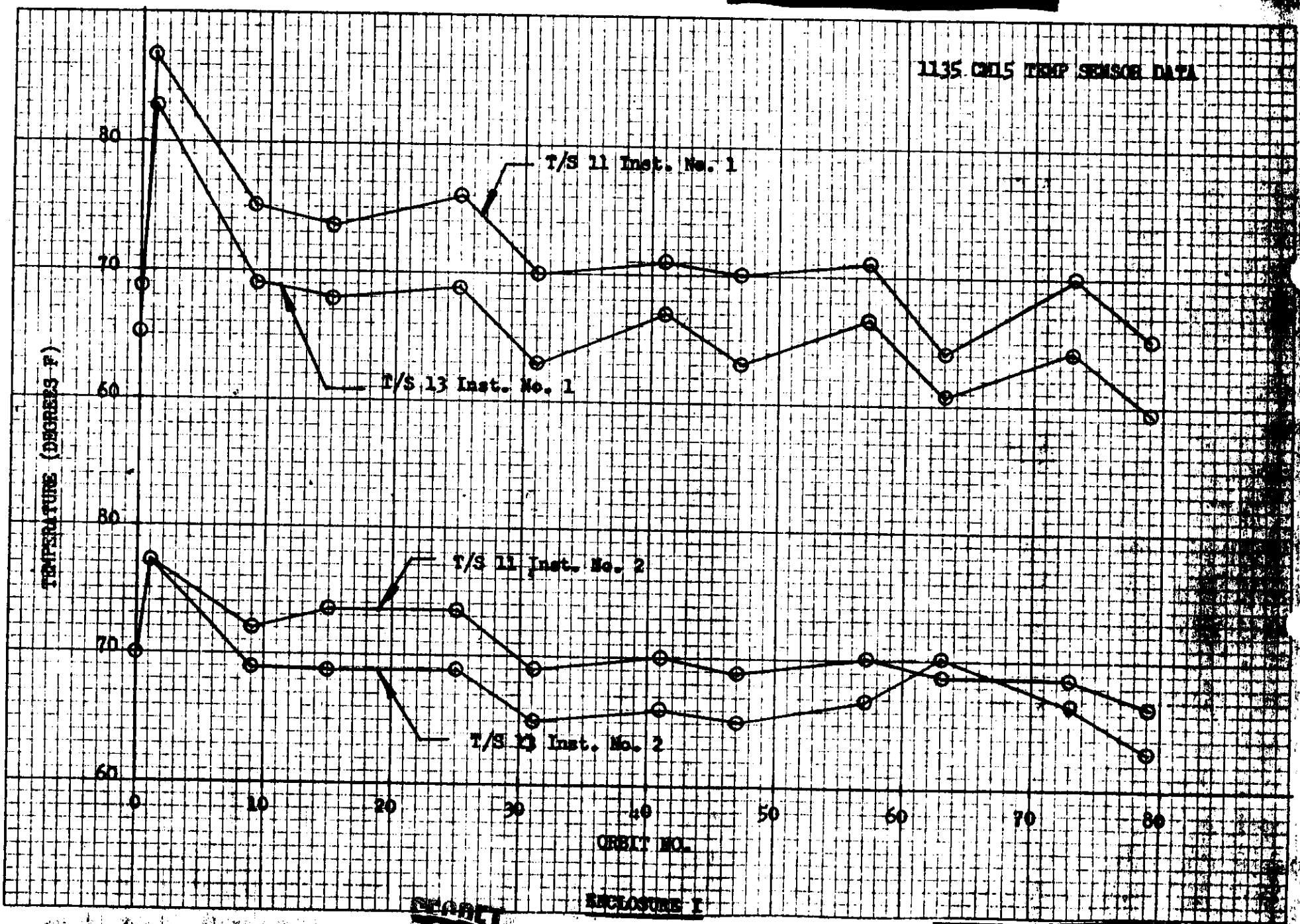

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ENCLOSURE I

[redacted]

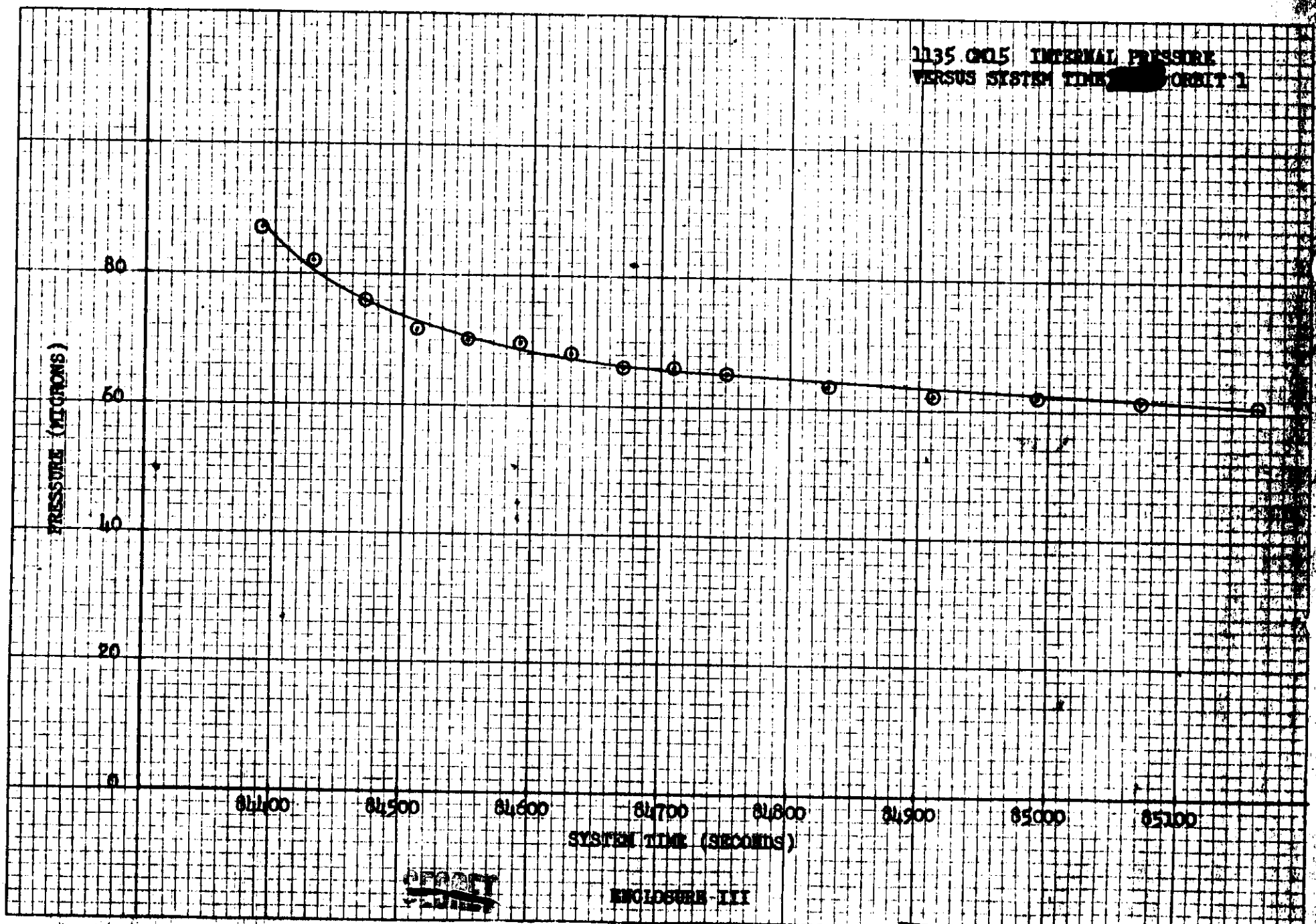
[redacted]

CM 15 1135 TEMPERATURE SUMMARY

TEMP SENSOR	LAUNCH LIFTOFF	+480 SEC.	ORBIT 1	9	15	25	31	41	47	57	63	73	79
Inst. No. 1													
2	66.5	69	82.0	76	78.3	77.1	71	74	73.6	74.9	71.1	71.1	71.1
5	64.1	75	82.0	69	68.9	68.9	66.5	69	66.5	66.5	64.1	66.5	63
7	65.2	70	98.9	83	84.2	84.2	77	81	78.3	80.7	78.3	77.1	76
11	65.2	103	86.8	75	73.6	76.0	70	71	70.0	71.1	64.1	70.0	65.2
12	66.5	83.1	82.0	57	54.9	57.2	52	55	52.6	54.9	50.2	55	50.2
13	68.9	66.5	83.1	69	67.8	68.9	63	67	63.0	66.5	60.7	64.1	59.5
Inst. No. 2													
2	68.9	70	78.3	78	79.6	79.6	75	76	76.0	76.0	73.6	74	72.4
5	68.9	69	74.9	71	73.6	73.6	70	70	71.1	70.0	67.8	69	66.5
7	67.8	70	83.1	81	83.1	82.0	76	78	78.3	78.3	76.0	75	74.9
11	70.0	71	77.1	69	68.9	68.9	65	66	65.2	67.8	70.0	66.5	63
12	-	70	89.1	93	85.5	87.9	81	83	79.6	83.1	76.0	78	72.4
13	68.9	65	77.1	72	73.6	73.6	69	70	68.9	70.1	68.9	68.9	66.5
S/I Unit													
1	61.9	85.5	92.8	65	59.5	64.1	56	61	58.3	60.7	54.9	60	53.8
2	54.9	93	94.0	64	59.5	63	55	60	54.9	59.5	54.9	59	53.8
Fairing													
4	68.9	200	84.0	69	69.2	58.5	60	54	56.0	56	53.8	48	53.8
Clock													
1	67.8	93	90.2	57	52.6	57.2	51	54	50.2	56	50.2	54	50.2
Thrust Cone													
1	66	74	126	64	58	63	56	60	54.6	60.5	52.3	56	50

[redacted]

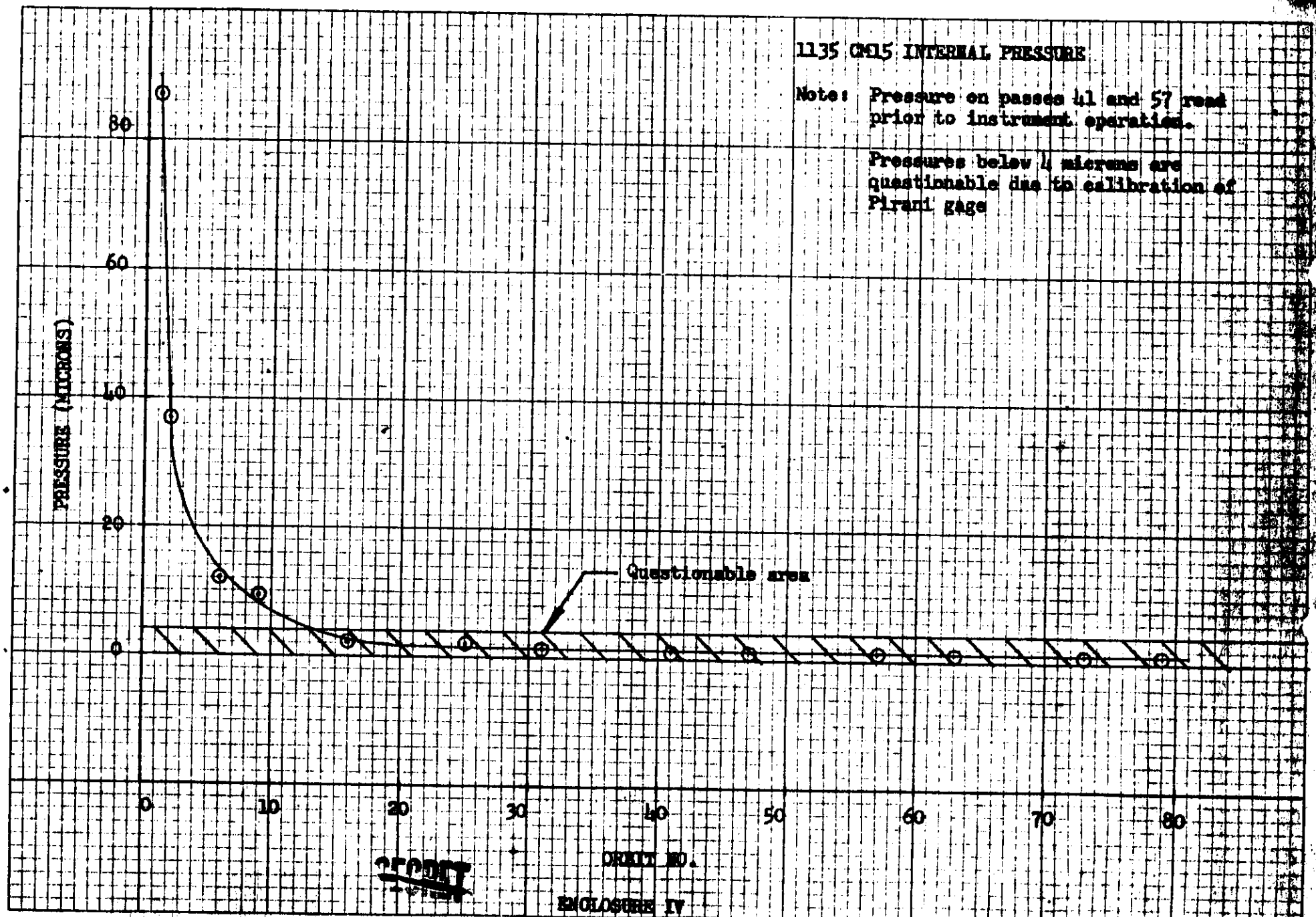
[redacted]



ENCLOSURE III

[redacted]

[redacted]



ENCLOSURE IV

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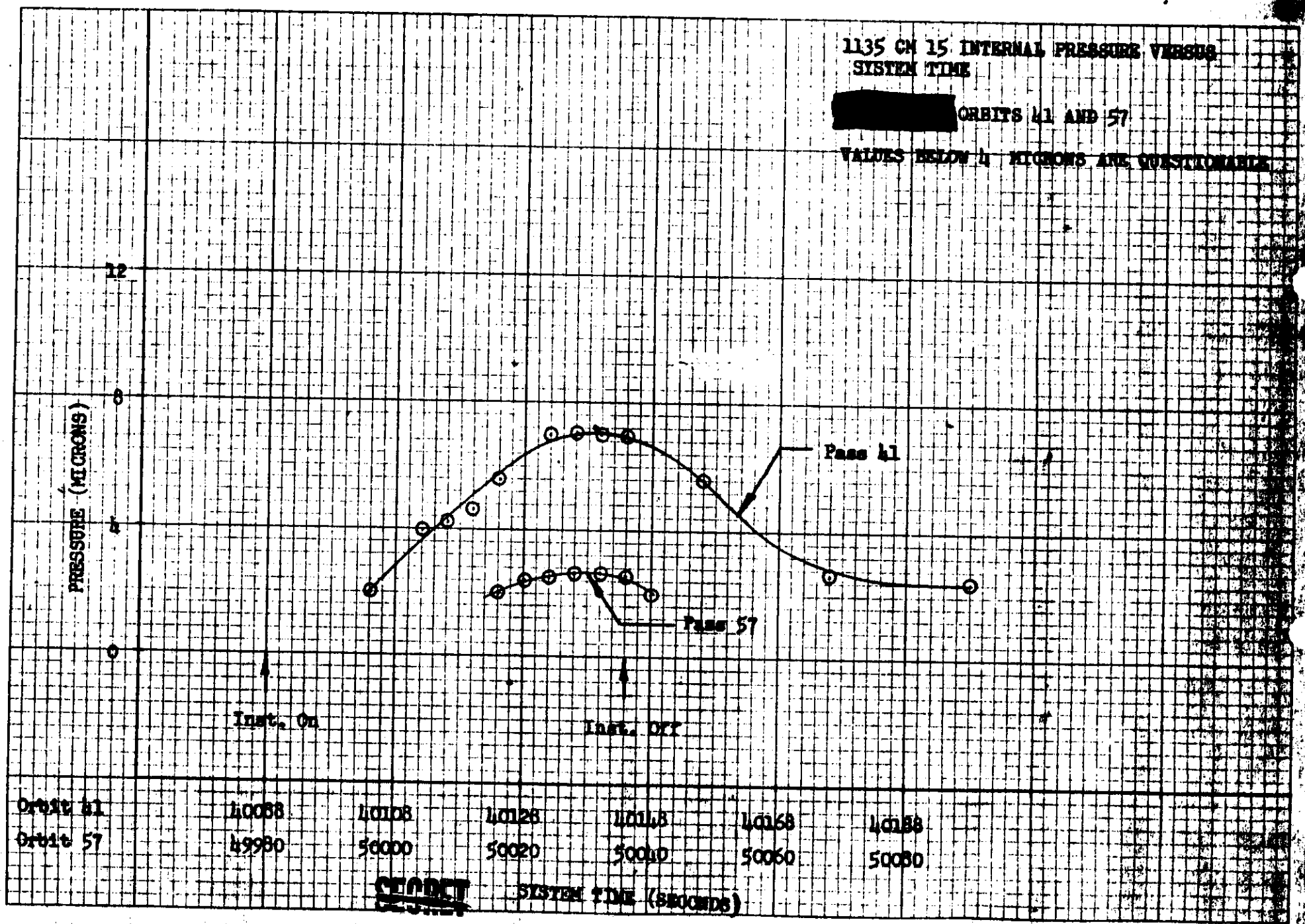

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ENCLOSURE V

ENCLOSURE 1A

1135 CM 15 PIRANI
GAGE CALIBRATION

T/M OUTPUT (VOLTS)

PRESSURE (MICRONS OF Hg)

100

TEMP-PLATE INSTALLATION - Mk I A CAPSULE

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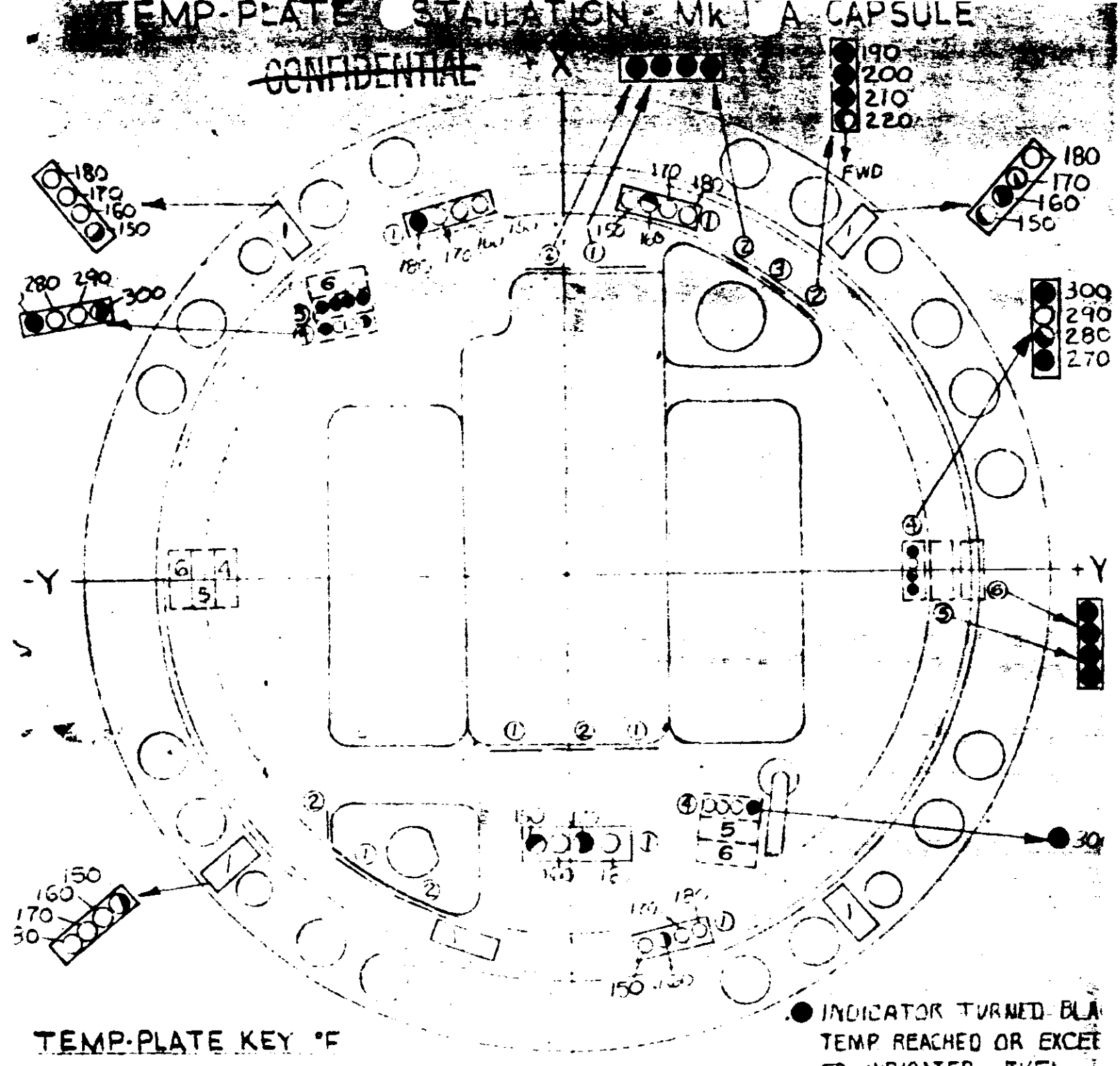

TEMP-PLATE KEY °F

A - 110·120·130·140
1 - 150·160·170·180
2 - 190·200·210·220
3 - 230·240·250·260
4 - 270·280·290·300
5 - 310·320·330·340
6 - 350·360·370·380
7 - 390·410·435·450

● INDICATOR TURNED BLA
TEMP REACHED OR EXCEE
ED INDICATED LEVEL

[ ] TEMP-PLATE LOCA
ED ON PARACHUTE
RISERS

LOOKING FORWARD
VEHICLE 1135
(WITH USE OF TEMP-PLATES)

~~CONFIDENTIAL~~