UNCLASSIFIED [redacted] 1426

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5

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 10/26/98
Authority: ADD
Name: R Craner
2nd Review Date: 2nd Rev. not
Authority: ADD
Name: required per DOE memo.
Determination (Circle Numbers)
Classification Retained
Classification Changed to U
Contains No DOE Classified Information
Coordinate With
Contains UCAI? no
Comments: OK for Apennet

JUN 9 1953

Case No. 552
Ref. Symbol: 1611
Project No. ET-1332
Completed 4/20/53

MR. W. E. CALDES - 1513 TCG-SAFF-1 TCG-NNT-1

Re: Temperature Compensation Test of Six Kollsman Altimeters (Types C-8, C-10, and C-12)

Object of Test

The object of this test was to determine the degree of temperature compensation possessed by the Kollsman altimeters in order to determine their reliability as used in the T-1 baro-switch tester.

Function of Object Tested

The Kollsman altimeters are used in the T-1 baro-switch tester as a standard to which the baro switches are compared.

Authorization for Test

This test was requested by Division 1513 in a Work Order Authorization dated March 16, 1953. Mr. W. J. Hovey was the consultant.

Summary of Results

The temperature compensation was poor.

CDL No.
ACCOUNT CARD BB
FILE No. T-1 3-2

Procedure

A. Test Conditions:

The six altimeters were connected to a manifold which was in turn connected to a mercury manometer and through a regulator to a vacuum pump. The units and the manifold were placed inside a temperature chamber. The test consisted of allowing the unit to stabilize at one temperature for at least three hours, then noting the readings of the altimeters for several different pressures. This was done at each of ten different temperatures.

Because the altimeter mechanisms tended to stick, it was necessary to mount vibrators on the pressure lines to each of the units. These vibrators were modified relays supplied by the consultant.

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO: U
AUTHORITY: R B Craner
Carmela Gallegos 10/29/98
PERSON CHANGING MARKING & DATE
RECORD ID: 99SN0240
W Cooper 10/30/98
PERSON VERIFYING MARKING & DATE
DATED: 10/26/98

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B. Equipment Used:

Hisatt temperature chamber No. 1
Welch Duo-Seal vacuum pump, Serial No. 5327-0
Wallace & Tiernan mercury manometer, Model FA 135, Serial No. WP59320
Wallace & Tiernan manostat pressure regulator, No. FA 149, Serial No. WP55373
National Welding Co nitrogen regulator No. 766, Serial No. 5116706
Tank of nitrogen gas

Results

The deviations from the altitude readings at +78°F versus temperature at various pressures are shown in Figs. 1 through 6.

The indicated altitude deviated, at most, 2 per cent at 25,000 feet at a temperature of +165°F, which is an error of 500 feet. This was in a Type C-8 altimeter. Two altimeters, a Type C-8 and a Type C-10, however, did considerably better, one being off 33 feet and the other 102 feet.

Because the altimeters had had considerable use before this test, these results are not unassailable. However, they do cast serious doubt on the reliability of the altimeters when temperature variations of more than 5 to 15°F are encountered.

John W. Martin
Test Conducted by J. W. MARTIN - 1611

R. L. Wagar
Approved by R. L. WAGAR - 1611

JWM:1611:bh

Encl: Fig. 1

Copy to:
J. R. Townsend, 1600
G. C. McDonald, 1210
R. H. Draper, 1240
A. F. Cone, 1510
T. B. Morse, 1610
L. J. Biskner, 2530
K. W. Erickson, 5130
E. B. Massengill, 1651
M. L. Craig, 5351
G. M. Byrne, 1921-3 [redacted]
J. M. Ralls, 1521-4 Attn: 1500 Drawing File

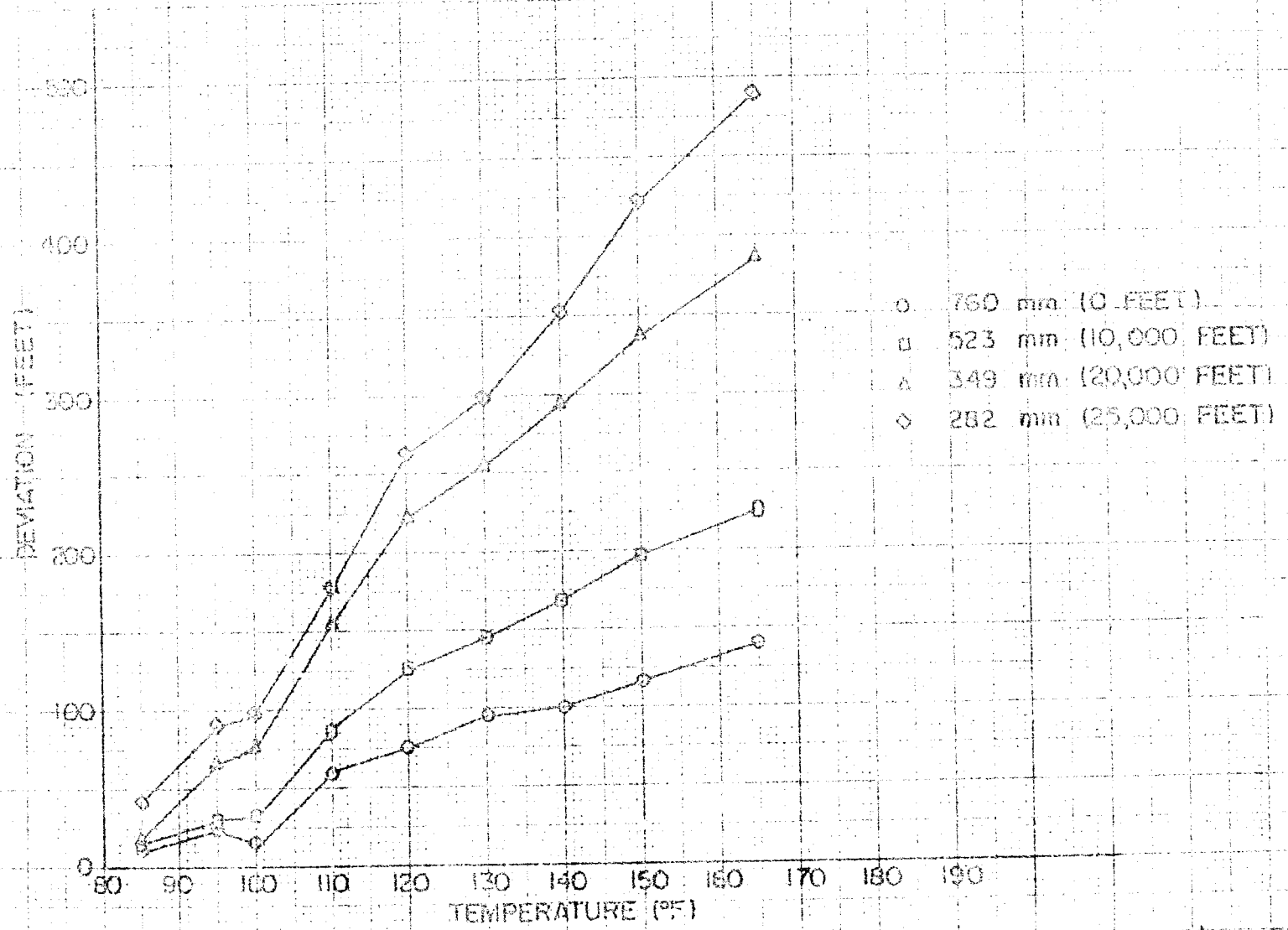

FIG. 1 – TEMPERATURE COMPENSATION OF KOLLSMAN ALTIMETER (NO. 1 TYPE C-8)
(DEVIATION FROM ALTITUDE READING AT +78°F.)

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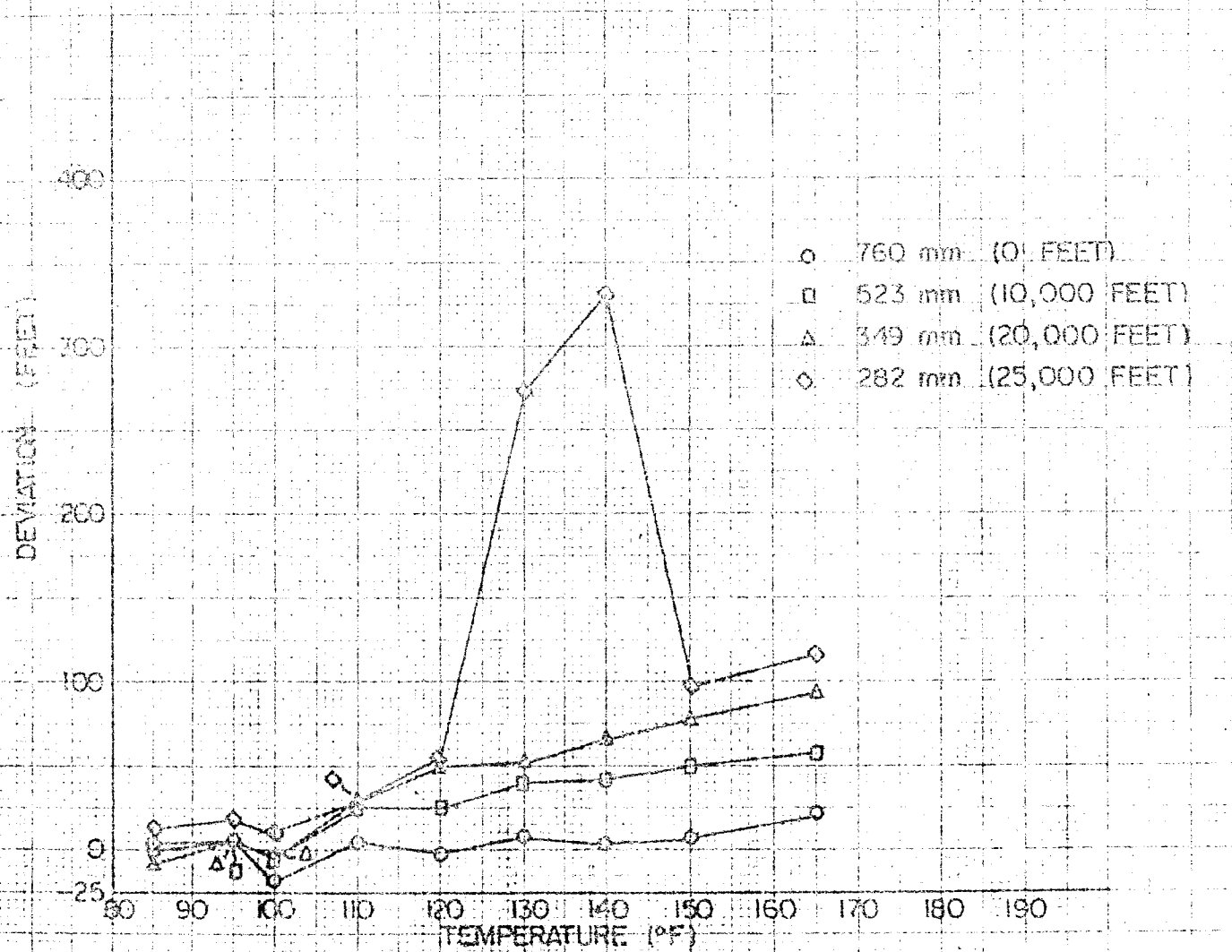

FIG. 2 - TEMPERATURE COMPENSATION OF KOLLSMAN ALTIMETER (NO. 2 TYPE C-8)
(DEVIATION FROM ALTITUDE READING AT +78° F)

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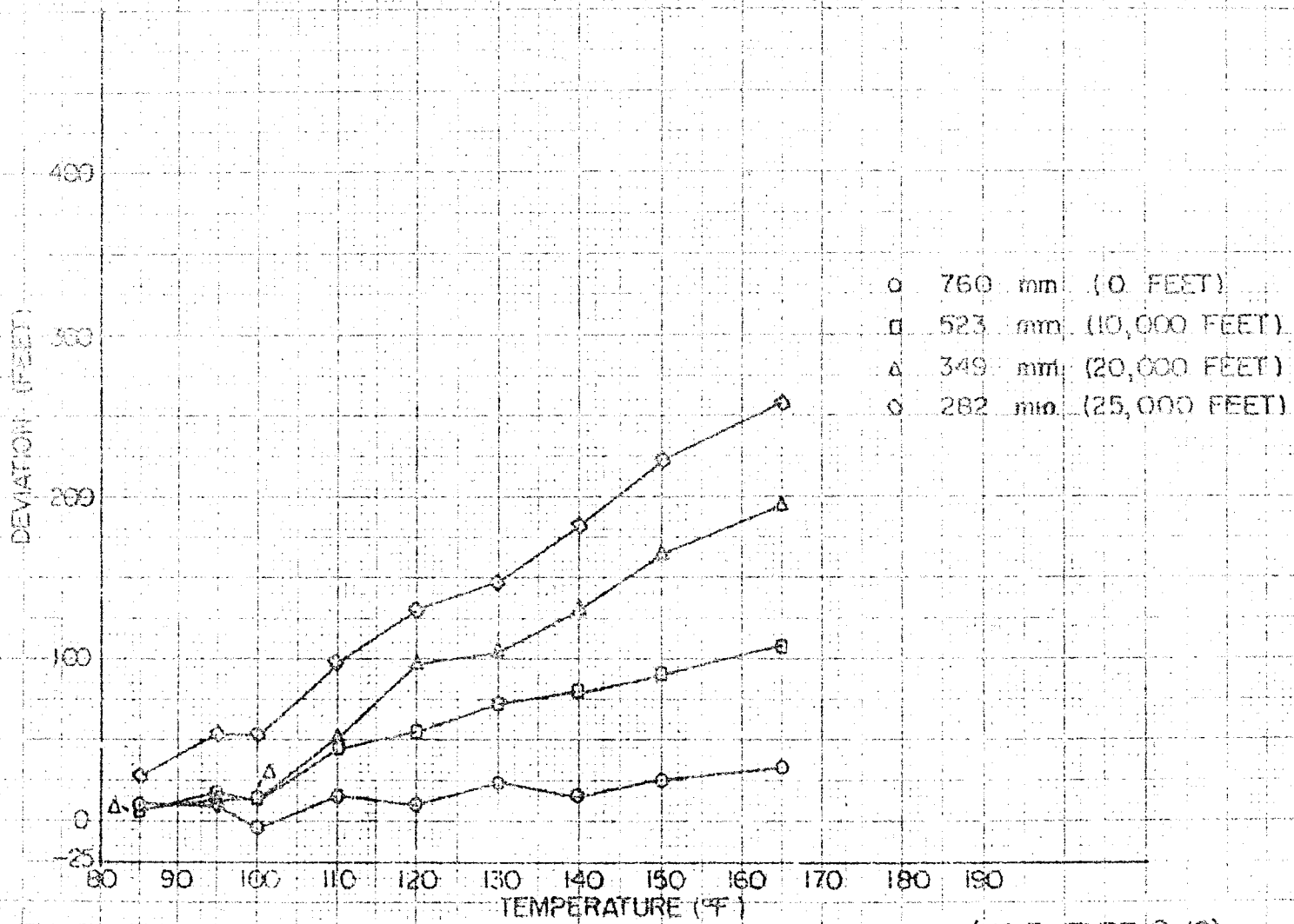

FIG. 3 – TEMPERATURE COMPENSATION OF KOLLSMAN ALTIMETER (NO. 3 TYPE C-12)
(DEVIATION FROM ALTITUDE READING AT +78° F.)

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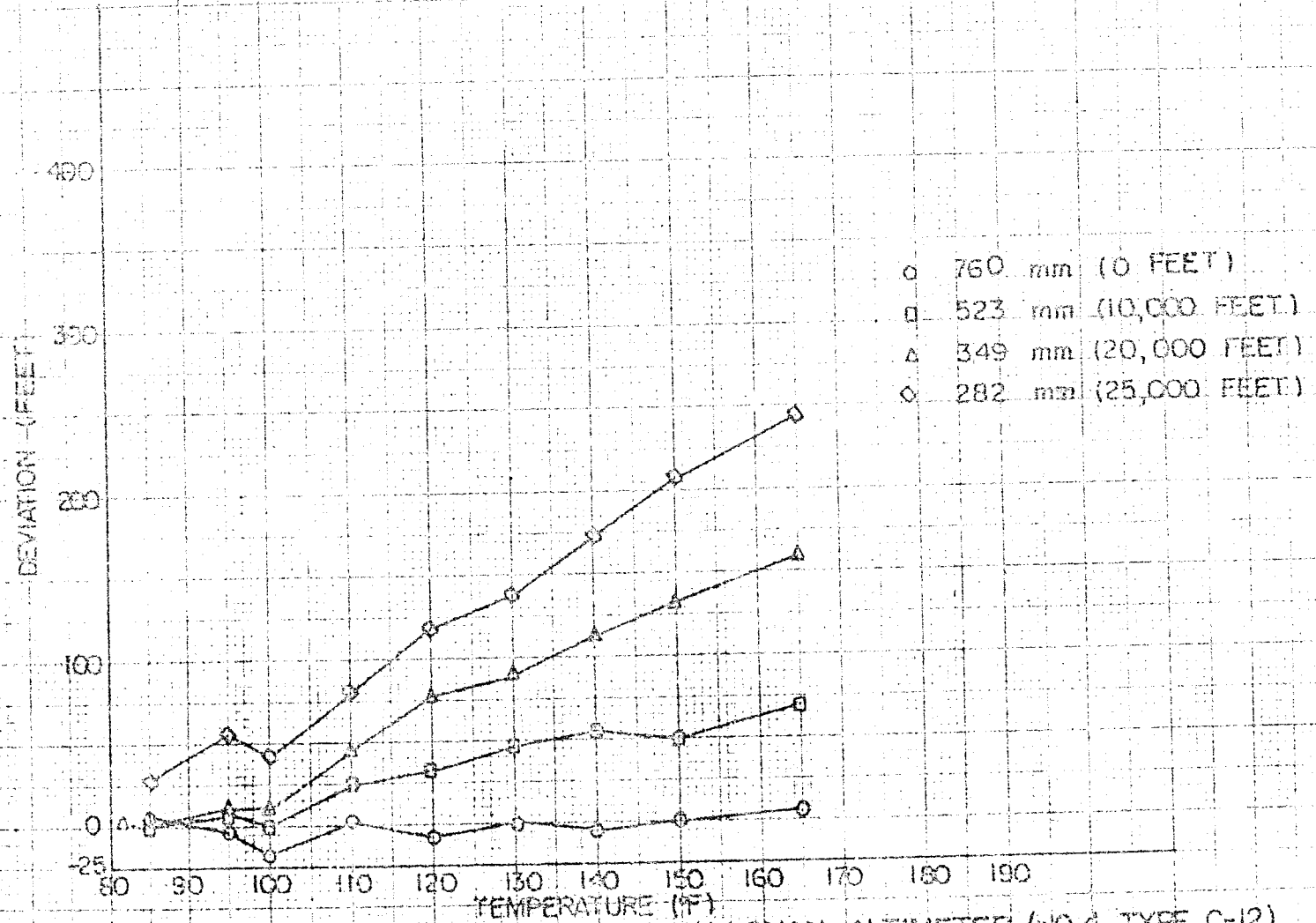

FIG. 4 – TEMPERATURE COMPENSATION OF KOLLSMAN ALTIMETER (NO. 4 TYPE C-12)
(DEVIATION FROM ALTITUDE READING AT +78° F)

ET-1332
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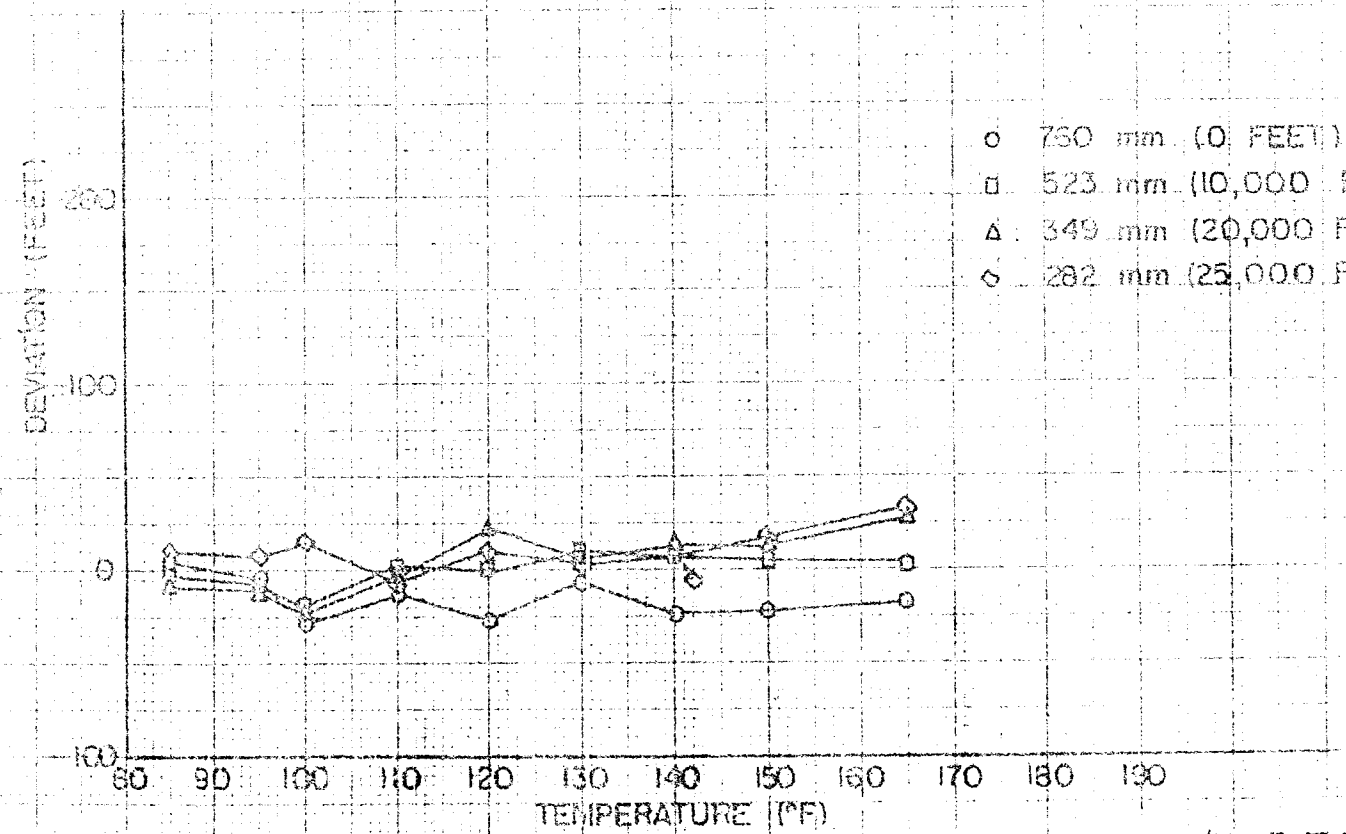

FIG. 5 — TEMPERATURE COMPENSATION OF KOLLSMAN ALTIMETER (NO. 5 TYPE C-10)
(DEVIATION FROM ALTITUDE READING AT + 78° F)

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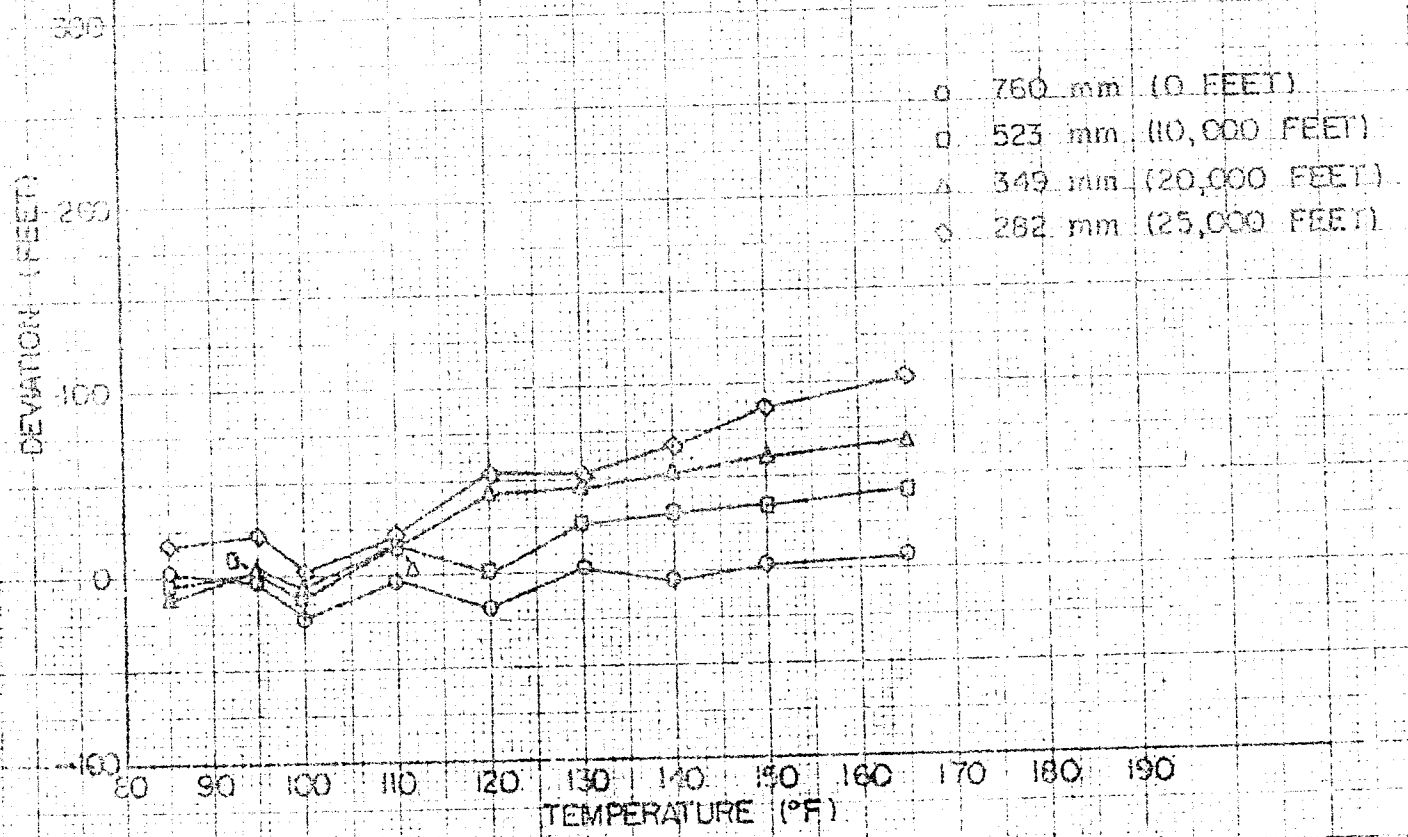

FIG. 6 – TEMPERATURE COMPENSATION OF KOLLSMAN ALTIMETER (NO. 6 TYPE C-8)
(DEVIATION FROM ALTITUDE READING AT + 78° F)

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