Department of the Navy
Naval Aviation Depot North Island

NAVY PRIMARY STANDARDS LABORATORY
(COM) 619/545-9705 (DSN) 735-9705 (FAX) 619/545-9861

Statement of Calibration

Manufacturer: Ballentine Labs Inc.
Description: Thermal Voltage Converter
Model: 1394A0.25

Submitted by:
Field Calibration Activity
USS Dixon (AS-37)

At present, NPSL is unable to provide service to this instrument due to lack of traceability to NIST.

If calibration of this instrument is deemed necessary, it is recommended that it be sent to the manufacturer and notify NPSL. NPSL will then do a feasability study and determine if it is cost effective to establish capability.

Standards used by the Navy Primary Standards Laboratory are directly traceable to standards defined, maintained and disseminated by the National Institute of Standards and Technology (NIST).

Statement Date: 26 Sep 1995

Metrologist: W E Riddell
W. E. Riddell

Approved by: J B MacKinnon
J. B. MacKinnon, Mgr.
Electronics Metrology

Department of the Navy
Naval Aviation Depot North Island

NAVY PRIMARY STANDARDS LABORATORY
(COM) 619/545-9705 (DSN) 735-9705 (FAX) 619/545-9861

Report of Calibration

Manufacturer: Ballentine Labs Inc.
Description: Thermal Voltage Converter
Model: 1394A1.4 **Serial:** 6367

Submitted by:
Field Calibration Activity
USS Dixon (AS-37)

Information regarding the use of this thermal voltage converter can be found on page two.

The AC-DC difference (D) in terms of percent of applied voltage is listed in the table on page two.

Standards used by the Navy Primary Standards Laboratory are directly traceable to standards defined, maintained and disseminated by the National Institute of Standards and Technology (NIST).

Ambient Temperature: 23 Degrees C.

Relative Humidity: 35 Percent

Calibration Date: 27 Sep 1995

Due Date: 27 Sep 1998

Metrologist: W E Riddell
W. E. Riddell

Approved by: J B MacKinnon
J. B. MacKinnon, Mgr.
Electronics Metrology

Manufacturer: Ballentine Labs Inc.
Description: Thermal Voltage Converter
Model: 1395A10.4 **Serial:** 6397
Date: 27 Sep 1995

The AC-DC difference (D) of a thermal voltage converter is a quantity which describes frequency response with respect to direct voltage. This quantity is determined by noting the percent difference between the alternating (AC) and direct (DC) input voltage required to produce the same thermal element output. This output is normally 7 to 10 millivolts, DC. Percent difference is defined as

$$D = [(Vac-Vdc)/Vdc]\ 100.$$

Therefore

$$Vac = Vdc\ [1+(D/100)].$$

Where Vac is an alternating voltage (of practically sine wave form) and Vdc is the average of both polarities of direct voltage. A negative sign signifies that less alternating than direct input voltage was required to produce the same thermal element output.

For additional information regarding the use and precautions to be observed during operation of the thermal voltage converter, refer to 'Information Concerning AC-DC Transfer Standards' published in March 1976 by the National Bureau of Standards (now National Institute of Standards and Technology).

==========

AC-DC difference (D), in %, of applied voltage

Test Voltage	.02 MHz	.05 MHz	.1 MHz	1 MHz	10 MHz	20 MHz	30 MHz	50 MHz
7.0	.000	.001	.002	.03	.02	.04	.2	.3

The Total uncertainty listed in the table below is the uncertainty the thermal voltage converter is expected to remain within for the duration of the calibration interval.

Total Uncertainty (% of input)	0.01	0.01	0.02	0.051	0.11	0.21	0.31	0.6

Manufacturer: Ballentine Labs Inc.
Description: Thermal Voltage Converter
Model: 1395A5.2 **Serial:** 6387
Date: 27 Sep 1995

The AC-DC difference (D) of a thermal voltage converter is a quantity which describes frequency response with respect to direct voltage. This quantity is determined by noting the percent difference between the alternating (AC) and direct (DC) input voltage required to produce the same thermal element output. This output is normally 7 to 10 millivolts, DC. Percent difference is defined as

$$D = [(Vac-Vdc)/Vdc]\ 100.$$

Therefore

$$Vac = Vdc\ [1+(D/100)].$$

Where Vac is an alternating voltage (of practically sine wave form) and Vdc is the average of both polarities of direct voltage. A negative sign signifies that less alternating than direct input voltage was required to produce the same thermal element output.

For additional information regarding the use and precautions to be observed during operation of the thermal voltage converter, refer to 'Information Concerning AC-DC Transfer Standards' published in March 1976 by the National Bureau of Standards (now National Institute of Standards and Technology).

==========

AC-DC difference (D), in %, of applied voltage

Test Voltage	.02 MHz	.05 MHz	.1 MHz	1 MHz	10 MHz	20 MHz	30 MHz	50 MHz
5.2	.000	.001	.002	.02	-.05	-.08	-.1	-1.2

The Total uncertainty listed in the table below is the uncertainty the thermal voltage converter is expected to remain within for the duration of the calibration interval.

Total Uncertainty (% of input)	0.01	0.01	0.02	0.051	0.11	0.21	0.31	0.6

Manufacturer: Ballentine Labs Inc.
Description: Thermal Voltage Converter
Model: 1395A3.3 **Serial:** 6377
Date: 27 Sep 1995

The AC-DC difference (D) of a thermal voltage converter is a quantity which describes frequency response with respect to direct voltage. This quantity is determined by noting the percent difference between the alternating (AC) and direct (DC) input voltage required to produce the same thermal element output. This output is normally 7 to 10 millivolts, DC. Percent difference is defined as

$$D = [(Vac-Vdc)/Vdc]\ 100.$$

Therefore

$$Vac = Vdc\ [1+(D/100)].$$

Where Vac is an alternating voltage (of practically sine wave form) and Vdc is the average of both polarities of direct voltage. A negative sign signifies that less alternating than direct input voltage was required to produce the same thermal element output.

For additional information regarding the use and precautions to be observed during operation of the thermal voltage converter, refer to 'Information Concerning AC-DC Transfer Standards' published in March 1976 by the National Bureau of Standards (now National Institute of Standards and Technology).

==========

AC-DC difference (D), in %, of applied voltage

Test Voltage	.02 MHz	.05 MHz	.1 MHz	1 MHz	10 MHz	20 MHz	30 MHz	50 MHz
3.0	.000	.000	.012	.03	-.04	-.09	-.2	-.6

The Total uncertainty listed in the table below is the uncertainty the thermal voltage converter is expected to remain within for the duration of the calibration interval.

Total Uncertainty (% of input)	0.01	0.01	0.02	0.051	0.11	0.21	0.31	0.6

Manufacturer: Ballentine Labs Inc.
Description: Thermal Voltage Converter
Model: 1395A1.4 **Serial:** 6367
Date: 27 Sep 1995

The AC-DC difference (D) of a thermal voltage converter is a quantity which describes frequency response with respect to direct voltage. This quantity is determined by noting the percent difference between the alternating (AC) and direct (DC) input voltage required to produce the same thermal element output. This output is normally 7 to 10 millivolts, DC. Percent difference is defined as

$$D = [(Vac-Vdc)/Vdc]\ 100.$$

Therefore

$$Vac = Vdc\ [1+(D/100)].$$

Where Vac is an alternating voltage (of practically sine wave form) and Vdc is the average of both polarities of direct voltage. A negative sign signifies that less alternating than direct input voltage was required to produce the same thermal element output.

For additional information regarding the use and precautions to be observed during operation of the thermal voltage converter, refer to 'Information Concerning AC-DC Transfer Standards' published in March 1976 by the National Bureau of Standards (now National Institute of Standards and Technology).

==========

AC-DC difference (D), in %, of applied voltage

Test Voltage	.02 MHz	.05 MHz	.1 MHz	1 MHz	10 MHz	20 MHz	30 MHz	50 MHz
1.0	.001	.002	.004	.05	-.06	-.10	-.1	-.5

The Total uncertainty listed in the table below is the uncertainty the thermal voltage converter is expected to remain within for the duration of the calibration interval.

Total Uncertainty (% of input)								
	0.01	0.01	0.02	0.051	0.11	0.21	0.31	0.6