UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5001

MCBO 6200.1A
B 03
22 Jul 02

MARINE CORPS BASE ORDER 6200.1A

From: Commanding General
To: Distribution List

Subj: HEAT CASUALTY PREVENTION PROGRAM

Ref: (a) MCO 6200.1D
(b) Naval Preventive Medicine: Chapter 9 (Preventive Medicine for Ground Forces), Section V (Prevention of Heat Injuries)
(c) MCO 3500.27A

Encl: (1) Guidelines for Physical Activity Restrictions
(2) Operation and Control of the Wet Bulb Globe Temperature (WBGT) Index
(3) Operation and Control of the Botsball Thermometer
(4) Instructions for the Control and Operation of the Wet Bulb Globe Temperature (WBGT) Meter
(5) Instructions for Use and Care of the Wet Bulb Globe Temperature (WBGT) Instrument Setup
(6) Instructions for Inspection/Maintenance of the Wet Bulb Globe Temperature (WBGT) Stations
(7) Checklist for Inspection of the Wet Bulb Globe Temperature (WBGT) Stations
(8) Report I, Wet Bulb Globe Temperature (WBGT) Index Log Sheet for WBGT Meter
(9) Report II, Wet Bulb Globe Temperature (WBGT) Index Log Sheet for WBGT Instrument Setup
(10) Heat Condition Notification Log
(11) Report III, Report NAVMED 6500/1

Reports Required: Report of Heat/Cold Casualty, NAVMED 6500/1 (Report Symbol Exempt), paragraph 4f and enclosure (11)

1. Purpose. To provide information necessary for the setup, monitoring, and care of Wet Bulb Globe Thermometer (WBGT) stations or electronic Heat Stress Indicator Monitors, and to provide instructions which regulate training and lower the incidence of heat casualties.

2. Cancellation. MCBO 6200.1.

3. Background

a. The climate in Quantico, VA from May to September can best be described as extremely hot and humid. It is not uncommon for temperatures to reach 100 degrees with dew points rising

above 80 percent. Each year during this period MCB, Quantico experiences several heat casualties with many resulting in emergency MEDEVAC. Therefore, caution must be given to all commands and tenant activities aboard MCB, Quantico to exercise sound judgment, operational risk management per reference (c), and good common sense while planning and supervising all activities. Furthermore, it is imperative that all commands not only be familiar with this Order and references, but more importantly have firmly in placed the means to educate all their personnel on associated severe and consistent heat conditions, how to prevent heat-related injuries, and how to treat heat-related injuries.

b. The Bureau of Medicine and Surgery has conducted extensive research on the problem of heat injury. References (a) and (b) contain instructions on the prevention of heat casualties. Reference (b) contains comprehensive instructions regarding the prevention of and first aid treatment for heat casualties. All permanent personnel supervising training will receive detailed instructions on enclosures (1) and (11) of this Order.

c. Exposure to high environment temperatures produces stress on the body. As the body attempts to compensate, physiological strain results. This strain, usually in combination with other strains caused by work, dehydration, and fatigue, may lead to manifestation of heat disorders and disability. Environmental conditions which influence the heat equilibrium of the body and its physiologic adjustments are air temperature, the temperature of surrounding objects, humidity, and air movement. The impact of these conditions is influenced by the type and amount of clothing worn and by the body's physiological mechanisms. The occurrence of heat injuries is not limited to hot weather. Although heat casualty prevention has primary consideration during the period from 1 May to 30 September, it is a year-round concern for all training supervisors.

d. Familiarity of this Order, troop information lectures, discussions, heat stress cards, and other similar educational programs should be used to enforce the prevention of heat casualties.

4. Tasks

a. Range Control Officer, Range Management Branch, G-3. Operate stations and applicable equipment, obtain, record and report readings per the enclosures of this Order. Provide MCB organizations and tenant activities located west of I-95 with accurate and timely flag and temperature readings. Maintain a phone log recording the dissemination of this information similar to that of enclosure (10). The following MCB organizations and tenant activities include:

(1) AC/S G-3: 4957/2860/3420

(2) TBS: 5368/5369

(3) EOD: 5314

(4) Natural Resources: 5324

(5) Weapons Training Bn (WTBn): 5226

(6) ASP: 5296

(7) Lunga Reservoir: 5270

(8) Guad Maintenance: 5311

(9) FBI: 703-640-6131

(10) I&I, D Co, 4th LAR Bn, Camp Upshur: 4013

(11) And, radio transmission to all units in training areas west of I-95.

b. OCS. Operate stations and applicable equipment, obtain, record and report readings per the enclosures of this Order. Act as the secondary POC in temperature and flag condition readings for MCB east of I-95. Be prepared to provide the AC/S G-3 with accurate and timely flag and temperature readings.

c. AC/S G-3. Utilize the Weather Station, MCAF (Primary), or OCS (Secondary) to provide MCB organizations and tenant activities located east of I-95 with accurate and timely flag and temperature readings. Maintain a phone log recording the dissemination of this information similar to that of enclosure (10). The following MCB organizations and tenant activities include:

(1) MCB Adjutant: 2152/2151

(2) HqSvBn: 2555/2556

(3) SctyBn: 4884

(4) MSGBn: 2082

(5) Marine Corps Community Services Division: 3006

(6) Naval Medical Clinic (NMCL): 1699

(7) Training and Education Command: 9577/9788

(8) MCU: 0135

(9) MarCorSysCom: 2413

d. CO OCS and Range Control Officer. CO OCS and Range Control Officer will ensure weekly WBGT or Heat Stress Indicator reading comparisons are conducted to ensure instrument accuracy. If both organizations are utilizing different mechanical means of

collecting temperature data, a comparison will still be made in order to gauge not only the accuracy, but the benefit or cost of either apparatus.

e. MCB Organizations and Tenant Activities. Establish resourceful and effective methods (SOPs) for the dissemination of flag and temperature readings to the personnel within your organization or activity.

f. OIC, Branch Clinics. Branch clinics will submit directly to the NMCL, a copy of Report of Heat/Cold Casualty, NAVMED 6500/1, in every case of heat illness requiring the attention of a medical officer as required by the references (see enclosure (11)). Forward required injury reports to the Director, Safety Division per reference (a).

5. Coordinating Instructions

a. Heat Stress Flag Locations. Heat stress flagpoles are located at various sites throughout the Base.

(1) Lejeune Hall: Front, near Command flagpole (Training Branch, G-3).

(2) MCAF: Opposite sentry booth (CO MCAF).

(3) OCS: Brown Field, front of reviewing stand (CO OCS).

(4) SNCOA: Northeast corner of parade deck at street intersection (Director, SNCOA).

(5) AWS: Southwest end of Geiger Hall (Director, AWS).

(6) HqSvcBn: Between Bldgs. 2006 and 2000 (CO HqSvcBn).

(7) TBS: In front of the parade deck and in front of Ramer Hall (CO TBS).

(8) WTBn: 600 yard firing line, Range 3 (CO WTBn).

(9) Camp Upshur: Beside the water tower, Bldg. 26147 (I&I, D CO, 4th LAR Bn).

(10) Range Control: Front of Range Control building (Range Control Officer).

b. WBGT. There are currently three WBGT Index stations to serve the MCB, Quantico area. These stations will operate per enclosure (2) of this Order.

(1) MCAF. East of I-95 (primary reading).

(2) OCS. East of I-95 (secondary reading).

(3) Range Control. Camp Barret (TBS) west of I-95.

6. Action. Commanders will:

a. Be aware of the hours of operation at branch clinics, before conducting training and/or exercises likely to result in heat stress.

b. Disseminate instructions contained in references (b) and (c), and enclosure (1) of reference (a) to all Marines engaged in training during hot weather.

c. Use the guidelines contained in enclosure (1) of this Order in determining the extent of physical activity allowable under the various heat stress data classifications.

d. Issue Heat Stress Card, MCCDC 6000/7, to all personnel engaged in training during hot weather.

e. Ensure all personnel who are responsible for the setup, monitoring and care of the WBGT Stations (and four Botsball Thermometers as a backup) have a thorough knowledge of the provisions of the references and this Order.

f. Ensure that all personnel assigned and trained to conduct temperature readings are thoroughly aware of the procedures outlined in the enclosures of this Order.

g. Commanders having WBGT Stations under their cognizance will maintain instrument sites and meters as required by this Order and provide the readings for use in the regulation of training.

h. Ensure all personnel exercise sound judgment in adjusting activities during all flag conditions.

i. Instruct all personnel if a casualty occurs without medical attention immediately available, call "911" for transport to Potomac Hospital.

D. L. WRIGHT
Chief of Staff

DISTRIBUTION: INTERNET

GUIDELINES FOR PHYSICAL ACTIVITY RESTRICTIONS

1. Controlling Heat Casualties. Per MCO 6200.1, the Wet Bulb Globe Temperature (WBGT) Index combines shade, air temperature, radiation, humidity, and wind into a single value to be used as a guide for monitoring training and other physical activities. Training during the period of 1 May to 30 September will be conducted per the following heat/flag index:

FLAG CONDITION	WBGT INDEX	PHYSICAL ACTIVITY RESTRICTIONS
Green	80.0 - 84.9	Heavy exercise for un-acclimatized personnel should be conducted with caution and under constant supervision.
Yellow	85.0 - 87.9	Strenuous exercises, such as hikes, close order drill, and obstacle courses suspended for un-acclimatized personnel. Outdoor classes in direct rays of the sun shall be avoided.
Red	88.0 - 89.9	All physical training halted for personnel not thoroughly acclimatized. Those thoroughly acclimatized may perform limited activity not to exceed 6 hours per day.
Black	90.0+	All strenuous nonessential outdoor physical activity will be halted for all units as outlined per reference (a).

NOTE: Essential activities are defined as those activities associated with scheduled exercises or other major training evolution where the disruption would cause undue burden on personnel or resources, be excessively expensive, or significantly reduce a unit's combat readiness. Essential outdoor physical activity will be conducted at a level that is commensurate with personnel acclimatization as determined by the unit's CO in coordination with the unit's medical officer or medical personnel. All efforts should be made to reschedule these activities during cooler periods of the day.

2. Curtailment of Training. As flag conditions progress from green to black, cumulative restrictions are placed on training. Violation of restrictions reduces the margin of safety beyond a permissible limit and results in the creation of heat casualties. COs will ensure all personnel exercise sound judgment in adjusting activities during all flag conditions.

OPERATION AND CONTROL OF THE WET BULB GLOBE TEMPERATURE (WBGT) INDEX

1. Operation of WBGT Stations

a. Period of Operation. Annually, 1 May to 30 September, and whenever outside temperature exceeds 75 degrees during training hours.

b. Hours of Operation. Monday-Friday, 0700-1700 or when black flag conditions are in effect. WBGT stations will not secure until black flag condition is terminated. Range Control will continue WBGT readings until 2200 daily, or until yellow flag condition is terminated.

c. Frequency of Index Readings. Hourly, however, when the index reaches 85 degrees, the reading will be taken per the directions in enclosures (3) and (4), every 30 minutes until the temperature drops below 85 degrees.

d. WBGT Index Readings. May be obtained from the Training Branch, G-3 (703-784-2475) between the hours of 0700-1700, Monday-Friday. Between the hours of 1700-0700 daily and on weekends and holidays, WBGT Index readings may be obtained from the Range Control Officer (703-784-5321/5322) and the Command Duty Officer (703-784-2707).

e. WBGT Index Calculating Procedures

(1) The index is obtained by combining the sub-indexes computed for each of the three instruments. The sub-indexes are derived from the instrument readings (in F degree), multiplied by the appropriate factors, i.e., .1 x dry bulb, .7 x wet bulb and .2 x black globe.

(2) Example Calculation. The WBGT Index is calculated as follows:

Temperature

Thermometer Reading (F degrees)	x Factor	= Sub-index
Dry Bulb temp 77	x .1	= 7.7
Wet Bulb temp 75	x .7	= 52.5
Black Globe temp 100	x .2	= 20.0
WBGT Index		= 80.2

f. Recording of Index Readings. The WBGT Index readings will be recorded on a WBGT Index log sheet and kept on file for 2 years using the format depicted in enclosures (8) and (9), whichever is applicable.

ENCLOSURE (2)

g. WBGT Telephone Log Sheet. Those responsible for reporting indices and conditions (see enclosure (2)) will maintain a daily log of the activities/sections notified (see enclosure (10)).

h. WBGT Index Notification Procedures (Working Hours). During working hours the CO OCS and the Range Control Officer, will report those index readings above 80, which necessitate a flag display or change in flag display to the AC/S G-3 at 703-784-2475/3421.

i. WBGT Index Notification Procedures (Non-Working Hours)

(1) The Range Control Officer will provide the WBGT index readings during non-working hours from 1700-2200 or termination of yellow flag conditions, whichever occurs last on weekdays; and from 0700-2200 or termination of yellow flag conditions, whichever occurs last on weekends and holidays. During non-working hours and weekends/holidays, the Range Control Officer will report those index readings, which necessitate a flag display or change in flag display to the following activities/sections:

(a) Command Duty Officer (CDO): 2707

(b) TBS: 5207 (Officer of the Day (OD))

(c) OCS: 2351/2352 (OD)

(d) Weapons Training Battalion: (OD)

(e) Units conducting training in MCB training areas west of I-95.

(2) The OCS OD will notify the MCB CDO of any flag condition changes that occur during non-working hours.

(3) The CDO will notify mainside MCB ODs:

(a) HqSvBn.

(b) SctyBn.

(c) Naval Medical Clinic.

OPERATION AND CONTROL OF THE BOTSBALL THERMOMETER

1. Botsball Thermometer

a. The Botsball Thermometer (NSN 6665-01-103-8547) is a device which combines the air temperature, humidity, wind, and thermal radiation into a single index indicated on a dial thermometer (see figure 1 of this enclosure). This index, however, differs in value from the Wet Bulb Globe Temperature (WBGT) Index by approximately 1.74)F. The variation in value results from the difference in the method of obtaining the wet globe temperature in the Botsball. The relationship of the WBGT Index to the Botsball temperature is expressed below:

WBGT= 1.044 (Botsball) - 1.740

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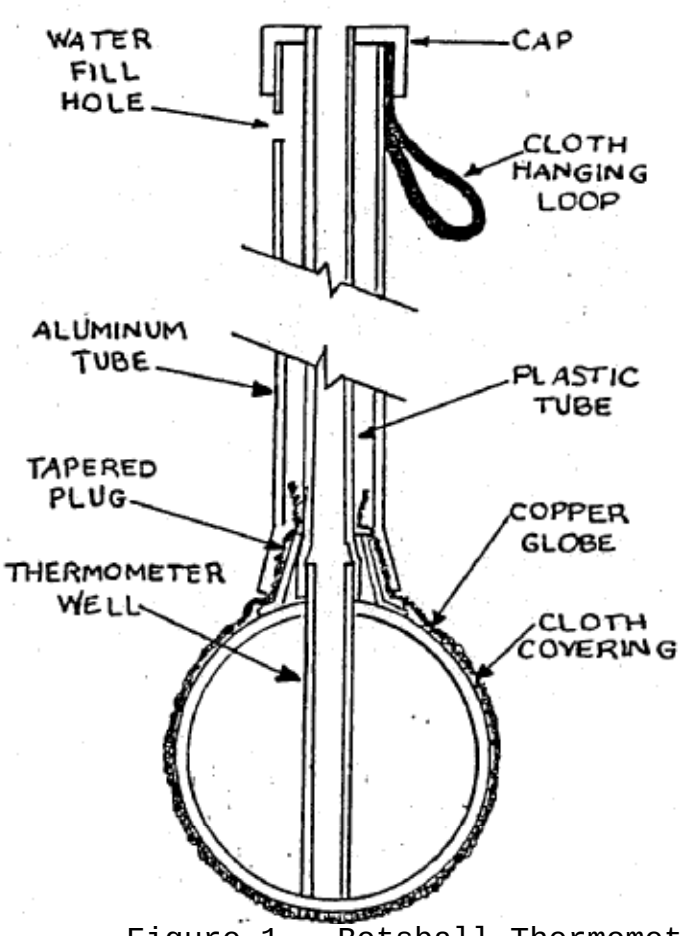

Figure 1.--Botsball Thermometer.

b. The color scale located on the surface of the Botsball thermometer dial, however, has been converted to correlate with the heat stress flag conditions adopted by the United States Armed Forces

and this Order. To determine the heat stress condition simply observe the color corresponding to the position of the pointer on the thermometer dial. Disregard the numerical values.

WBGT	Botsball	Flag Condition
80	78.2	Green
85	83.1	Yellow
88	86.0	Red
90+	87.9+	Black

2. Distribution. Commanders will be responsible for maintaining and/or replacing Botsballs, as necessary, to ensure that the minimum number indicated below is on hand.

Unit	Number of Botsballs
OCS (east of I-95)	4
Range Control (west of I-95)	4

3. Principles of Operation. The Botsball consists of a 2 3/8-inch hollow copper sphere that is painted black and covered with a black cloth. The cloth covering is continuously moistened by water seeping from the aluminum reservoir tube attached to the globe. The stem of the dial passes through a plastic tube along the centerline of the water reservoir tube into the globe to sense its temperature. When placed in a hot area, the globe is warmed by the surrounding air and by heat radiated from the hot surfaces. It is cooled by evaporation according to the wind and humidity. The wet globe reaches an equilibrium temperature when these heating effects come into balance. Any change in air, humidity, wind, or thermal radiation that causes the Botsball temperature to rise will increase human discomfort or stress.

4. Operating Instructions

a. To use the Botsball Thermometer first fill the plastic squeeze bottle with water but not above the "fill line." Use the squeeze bottle to fill the water reservoir of the globe assembly through the fill hole in the side of the reservoir near the top.

b. Make sure the cloth covering of the globe is saturated thoroughly by rubbing drops of water from the squeeze bottle into the cloth with the fingers or by dipping the globe in water. Also, make sure that the part of the cloth cover gathered inside the reservoir tube is thoroughly saturated by gently pulling the reservoir tube upward away from the globe to allow water to flow out of the reservoir through this structure.

c. To measure the Botsball temperature, hang the globe assembly in the desired location with a string or wire attached to the hanging

loop at the top of the water reservoir. The temperature of the wet globe will come to equilibrium with unchanging thermal surroundings in 5 minutes. Water seepage from the reservoir to the globe may be adjusted to keep the globe wet under all evaporative conditions without excessive dripping. To increase water flow, pull the water tube away from the globe gently with a slight twisting motion; to decrease water flow, push them together.

d. If the Botsball Thermometer will be in continuous use for long periods, a siphon should be used to keep the reservoir filled. Attach one end of the small plastic tube furnished with the thermometer to the spout of the squeeze bottle and push the other end of the tube through the fill hole to the bottom of the reservoir. Suspend the squeeze bottle and the thermometer at the same height. To start the siphon, squeeze the bottle until water runs out of the water reservoir fill hole and then vent the pressure in the bottle by loosening the bottle cap.

e. After using the Botsball Thermometer, store it in the plastic bag it arrived in gathering the top tightly around the reservoir tube with the wire closure provided. This procedure will keep the globe wet and ready for immediate use on the next occasion.

INSTRUCTIONS FOR THE CONTROL AND OPERATION OF THE WET BULB GLOBE TEMPERATURE (WBGT) METER

1. WBGT Meter. The WBGT Meter (NSN 6685-01-055-5298) is used for measuring environmental conditions which may produce unacceptable levels of heat stress. The meters are in the supply system and have been issued to the WBGT stations as follows:

Station	Number of Meters
OCS (east of I-95)	2
Range Control (west of I-95)	2

2. Usage of WBGT Meter

a. The WBGT Meter (figure 1 of this enclosure) will be the primary means of measuring the WBGT Index at each of the stations. Readings will be taken in the vicinity of the existing WBGT instrument setup. The meter measures the dry bulb (DB), wet bulb (WB), Globe Temperature (GT) and the WBGT in the range between 65°F and 165°F. The present WBGT instrument setup located at each of the stations will continue to be maintained as a secondary means of measuring the WBGT should the meters fail.

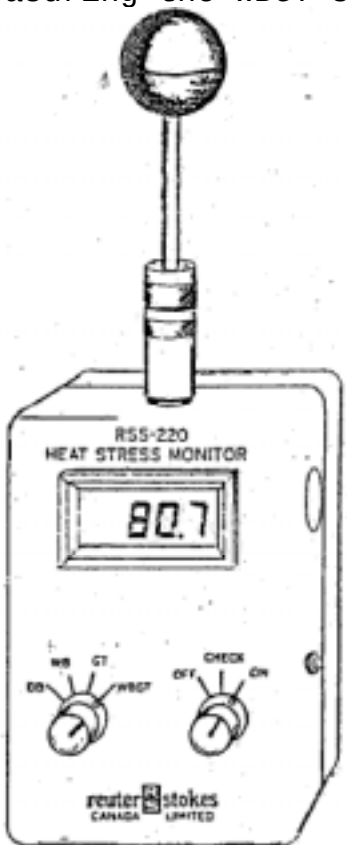

Figure 1.--WBGT Meter.

ENCLOSURE (4)

b. COs/directors having responsibility to monitor and maintain WBGT stations will ensure that the WBGT Meters are properly maintained. The meter has few moving parts and requires only that the batteries are charged regularly and the wick of the wet bulb temperature sensor be changed occasionally. Only two repair operations on the WBGT Meter can be performed by the user. They are replacement of faulty batteries and replacement of the tunnel assembly. All other casualties require return of the meter to the supply system for repair.

3. Operating Instructions. The WBGT Meter requires a minimum initial exposure of 5 minutes when introduced into a new environment and 3 minutes exposure for changes of position within that environment to produce accurate readings.

a. Turned-On. The turned-on procedure readies the WBGT Meter for operation. It includes several steps that test the condition of the meter. If the meter fails to pass these tests, refer to the technical manual. Turned-on procedure:

(1) Install globe sensor by pushing plug on base of sensor into jack on top of meter. Handle globe sensor with care. The globe (black ball) can easily be damaged by squeezing, bumping, or dropping it.

(2) Fill the wet bulb reservoir from water bottle provided. The reservoir is accessible through the end of the tunnel marked "WATER FILL." When filled, water should completely cover the sponge and be well below the level of the tunnel. Excess water can be poured out of the tunnel end. Be careful to keep the dry bulb sensor dry. If it becomes wet, dry it with a tissue or soft cloth before operating the meter.

(3) Turn power switch to "CHECK." You will hear the sound of the fan and see digits on the display.

(4) Turn measurement function switch to "DB," "WB," "GT," and "WBGT" in turn. Each position will give a display reading of 100-0.2, if the meter is calibrated.

(5) Hand hold or place on a flat surface about 4 feet from deck of the environment to be measured. To maintain consistency in the WBGT indices, readings for the WBGT Meter will be taken in the same proximity as the existing WBGT instrument setup.

(6) Wait 5 minutes for initial readings, 3 minutes for subsequent readings, with power switch at "CHECK."

(7) Turn power switch to "ON."

(8) Turn measurement function switch to measurement desired.

b. Operation. In operation, the meter should be held in the air stream with the end of the tunnel marked “WATER FILL” facing the air stream. The globe temperature sensor must be at least 18 inches from the operator to avoid interference from his/her body temperature. Once the meter has stabilized, each of the temperatures in a single environment may be measured without repeating complete turned-on procedures.

c. Turnoff. The procedure to turnoff the WBGT Meter is:

(1) Turn power switch to “OFF.”

(2) Pour water from reservoir through the end of tunnel marked “WATER FILL.”

(3) Remove globe temperature sensor by holding the sensor at base and pulling plug from jack.

d. Water Bottle. The wet bulb reservoir must be filled with distilled or de-ionized water. Distilled water should be used, if available.

e. Battery. Decimal points between all digits on the display or no display may indicate a discharged battery. The meter can still be operated if a 115 AC power source is available.

INSTRUCTIONS FOR USE AND CARE OF THE WET BULB GLOBE TEMPERATURE (WBGT) INSTRUMENT SETUP

1. Figure 1 below depicts the proper instrument station. Although the thermo screen shelter is not shown in the drawing, it should be in the immediate vicinity. The shelter is used to house the dry bulb thermometer and spare instruments. Certain items, such as clamps, stoppers and flasks, have not been provided addressees. These items are standard and may be obtained locally.

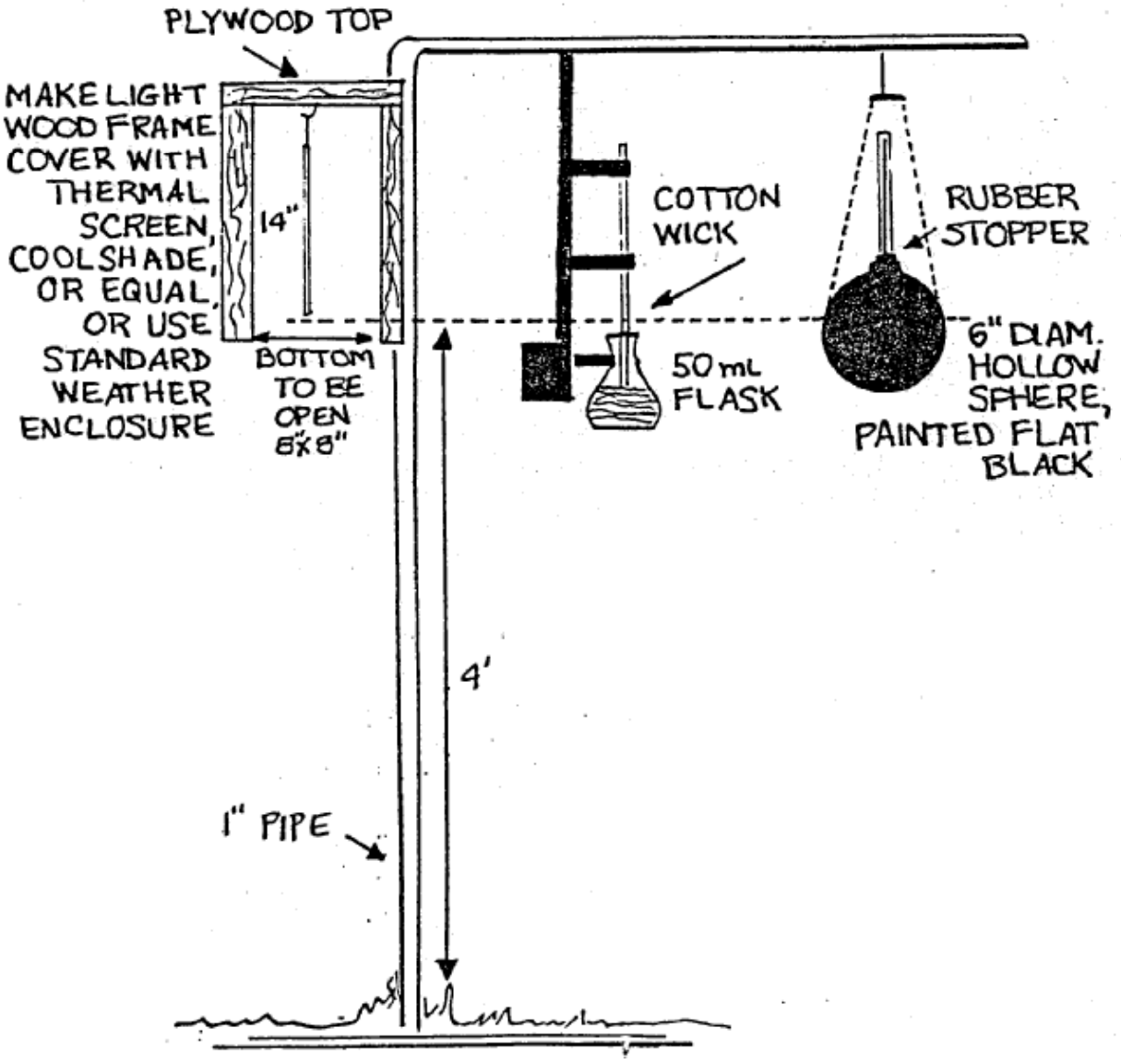

Figure 1.--Wet Bulb Globe Temperature Instrument Setup.

ENCLOSURE (5)

2. Instructions for Use of the Shade Dry Bulb Thermometer

a. The Shade Dry Bulb Thermometer is an ordinary mercury thermometer, 12 inches long and graduated from 30° to 150°F. The thermometer is housed in a thermo screen shelter adjacent to the Wet Bulb and Black Globe Thermometers. The thermo screen shelter has inside dimensions of 12-14 inches high, 8 inches wide, and 8 inches deep. It is made of light wood, louvered on the sides and front door, and open on the bottom. It is covered with a thermal screen cool shade or standard weather enclosure. The shelter is situated so that the thermometer is approximately 4 feet off the ground.

b. The thermometer is supported inside by a hook and is suspended by a wire or string over a grass or gravel surface.

c. See figure 2 of this enclosure.

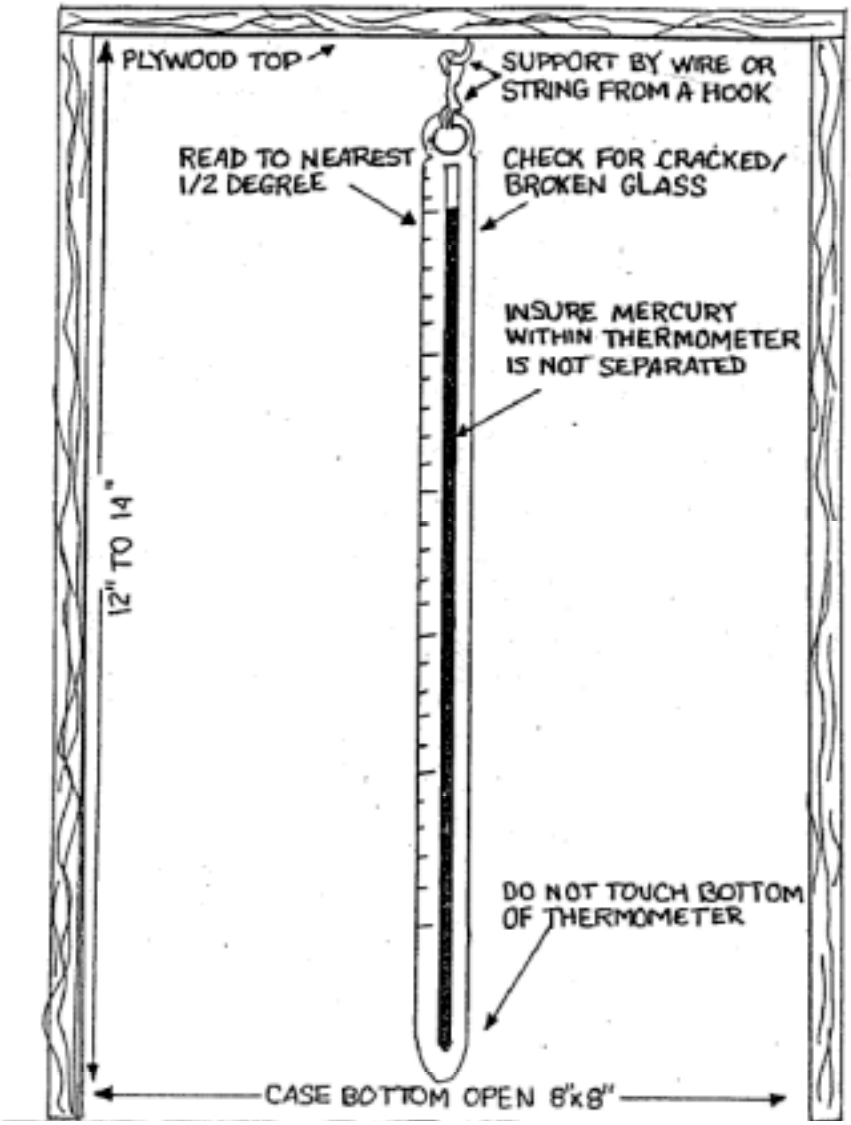

Figure 2.--Shade Dry Bulb Thermometer.

3. Instructions for Use and Care of the Natural Wet Bulb Thermometer

a. The Natural Wet Bulb Thermometer is an ordinary mercury thermometer, 30° to 150°F, with a wet wick around the bulb and exposed in an un-shaded position to natural air movement and to solar radiation. The Natural Wet Bulb is cooled by natural convection but at the same time is warmed by solar radiation. Therefore, for the same air movement, its reading will be higher than a Shaded Wet Bulb.

b. The Natural Wet Bulb Thermometer is suspended from a horizontal arm supported by the same upright used to mount the Globe Thermometer.

(1) The wick consists of a white shoelace with the tips cut off. The shoelace must be of cotton, as other fabric will give false readings. One end surrounds the bulb of the mercury thermometer. The other end is immersed in water contained in a small flask suspended from the same horizontal arm.

(2) The wick should be rinsed with fresh water every 2 days, and the water in the flask replaced with fresh water every 2 days. Each week the wick should be washed with soap and water, then rinsed thoroughly.

(3) The wick surrounding the bulb should be thoroughly wet, but the bulb must be 1-inch above the mouth of the flask and freely exposed to the air.

(4) See figure 3 of this enclosure.

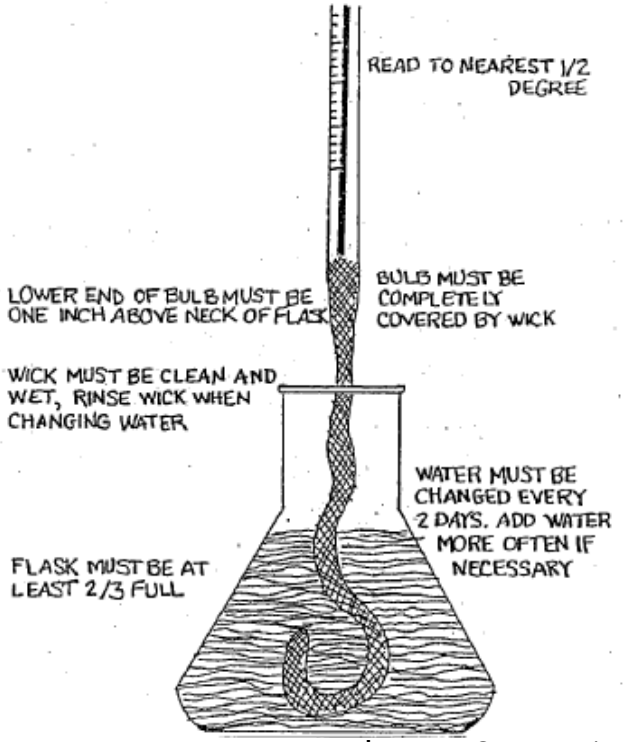

Figure 3.--Wet Bulb Thermometer.

ENCLOSURE (5)

4. Instructions for Use of the Globe Thermometer

a. The Globe Thermometer consists of a 6-inch sphere of copper painted matte black on the outside. Into the neck of the globe is inserted an ordinary mercury thermometer, 12 inches long and graduated from 30° to 150°F. The thermometer is held in place with a tight-fitting, one-hole rubber stopper. The bulb of the thermometer is centered at the midpoint of the globe.

b. The Globe Thermometer should be mounted from a 6-foot vertical support with a horizontal arm about 36 inches long. The globe is suspended by sturdy braided flexible wire from the outboard end of the horizontal arm. The center of the globe should be 48 inches from the ground. The arm must point south to avoid a shadow of the upright from falling on the globe.

c. The purpose of the Globe Thermometer is to combine the thermal effects of the air and the thermal effects of radiation from the sun and hot surfaces in the environment into a single reading. This reading, when related to humidity, will provide a means of estimating total heat stress of the environment.

d. To perform reliably, the globe must be situated in a widely open area where it will not be shielded in any way from the sun and wind. The ground below should be either grass or gravel. Asphalt surfaces are not desirable.

e. The globe requires no attention except that the surface should be kept free of dust and streaks and must be repainted each year. After rain, the thermometer should be removed and the globe turned upside down to empty any water that may have leaked in.

f. See figure 4 of this enclosure.

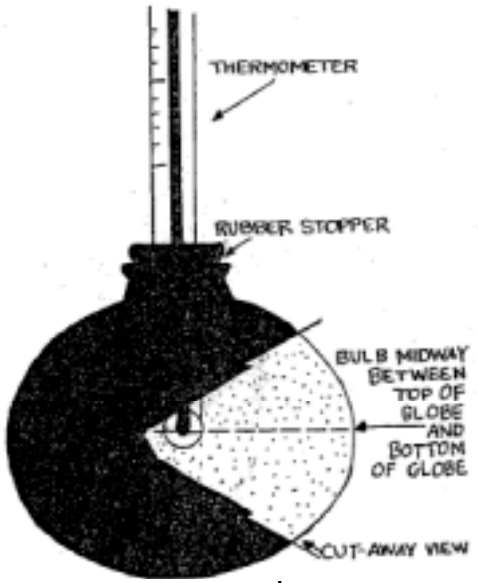

Figure 4.--The Globe Thermometer.

INSTRUCTIONS FOR INSPECTION/MAINTENANCE OF THE WET BULB GLOBE TEMPERATURE (WBGT) STATIONS

1. WBGT Meters

a. Inspection. The WBGT Meter will be the primary means of measuring the WBGT Index at each of the WBGT stations. The CO OCS and the Range Control Officer will ensure that the procedures contained in enclosure (4) are disseminated to personnel responsible for obtaining the WBGT Index.

b. Maintenance. The WBGT Meter requires only that the batteries are charged regularly and the wick of the wet bulb globe temperature sensor be changed periodically. Only two repair operations can be performed by the user. They are replacement of faulty batteries and replacement of the tunnel assembly. All other repairs require return of the meter to the supply system for repair.

2. WBGT Instrument Setup

a. Inspection. The WBGT instrument setup located at each of the WBGT stations will continue to be maintained as a secondary means of measuring the WBGT should the WBGT Meters provide inaccurate readings. The CO OCS and the Range Control Officer will ensure that inspections of the WBGT instrument setup are conducted prior to obtaining WBGT readings. The checklist contained in enclosure (7) will be utilized.

b. Maintenance. The WBGT instrument setup will be maintained as indicated in enclosure (5).

3. Comparison Checks. To ensure the accuracy of the readings obtained from the WBGT Meter, a weekly comparison check with a reading from the WBGT instrument setup will be conducted. The comparison checks will be conducted every Monday during the heat stress season and will be recorded in enclosure (8).

CHECKLIST FOR INSPECTION OF THE WET BULB GLOBE TEMPERATURE (WBGT) STATIONS

1. Shade Dry Bulb Thermometer

a.	Is the thermometer a mercury thermometer?	YES/NO
b.	Is the thermometer graduated 30° to 150°F?	YES/NO
c.	Is the thermometer in a thermo screen shelter?	YES/NO
d.	Does the shelter have louvered sides and fronts?	YES/NO
e.	Does the shelter have an open or screened bottom?	YES/NO
f.	Is the thermometer suspended 4 feet from the ground?	YES/NO
g.	Is the thermometer free of cracks/chips?	YES/NO
h.	Has the mercury in the thermometer separated?	YES/NO

2. Natural Wet Bulb Thermometer

a.	Is the thermometer a mercury thermometer?	YES/NO
b.	Is the thermometer graduated 30° to 150°F?	YES/NO
c.	Is the thermometer bulb completely covered by the wick?	YES/NO
d.	Is the lower end of the thermometer bulb 1-inch above the neck of the flask?	YES/NO
e.	Is the flask at least 2/3 full of water?	YES/NO
f.	Is the wick clean and wet?	YES/NO
g.	Is the wick made of cotton?	YES/NO
h.	Is the thermometer suspended 4 feet from the ground?	YES/NO
i.	Is the thermometer free of cracks/chips?	YES/NO
j.	Has the mercury in the thermometer separated?	YES/NO

3. Globe Thermometer

a.	Is the thermometer a mercury thermometer?	YES/NO
b.	Is the thermometer graduated 30° to 150°F?	YES/NO
c.	Is the thermometer inserted through an airtight stopper through a rubber ball?	YES/NO
d.	Is the bulb of the thermometer centered at the midpoint of the globe?	YES/NO
e.	Is the globe painted matte black on the outside?	YES/NO
f.	Is the globe surface free of dust, dirt, streaks and bird residue?	YES/NO
g.	Is the globe free of rain water?	YES/NO
h.	Is the thermometer suspended 4 feet from the ground?	YES/NO
i.	Is the thermometer free of cracks/chips?	YES/NO
j.	Is the horizontal arm pointing south to avoid a shadow of the upright from falling on the globe?	YES/NO
k.	Has the mercury in the thermometer separated?	YES/NO

4. WBGT Station

a.	Is the station located over a grass or gravel surface?	YES/NO
b.	Is the station located in a wide open area?	YES/NO
c.	Is a copy of the WBGT log sheet being maintained?	YES/NO

NOTE: A negative answer on any question, except 1h, 2j, and 3k, indicates a need for immediate corrective action.

REPORT I, WET BULB GLOVE TEMPERATURE (WBGT)
INDEX LOG SHEET FOR WBGT METER

DATE _____
STATION _____

WBGT CHECX (100.0 ± .2)	DRY BULB	WET BULB	GLOBE TEMPERATURE	WBGT	TIME

TIME	DRY BULB	WET BULB	GLOBE TEMPERATURE	WBGT INDEX	WBGT FLAG CONDITION	INTIALS
0700						
0730						
0800						
0830						
0900						
0930						
1000						
1030						
1100						
1130						
1200						
1230						
1300						
1330						
1400						
1430						
1500						
1530						
1600						
1630						
1700						
1730						
1800						
1830						
1900						
1930						
2000						
2030						
2100						
2130						
2200						

WBGT Index	79.9 & Below	80.0-84.9	85.0-87.9	88.0-89.9	90.0 & Above
WBGT Flag Condition	Normal	Green	Yellow	Red	Black

This log will be kept daily from 1 May through 30 September or whenever the temperature exceeds 75 degrees during training hours.

ENCLOSURE (8)

REPORT II, WET BULB GLOVE TEMPERATURE (WBGT) INDEX LOG SHEET FOR WBGT INSTRUMENT SETUP

DATE: WBGT STAION #

Local Time	Instrument Inside Shelter Dry-Bulb Thermometer Reading x 0.1 = A	Instrument Outside Shelter Globe Thermometer Reading x 0.2 = B	Instrument Outside Shelter Natural Wet-Bulb Thermometer Reading x 0.7 = C	A+B+C= WBGT Index	INITIALS
0700					
0730	I				
0800					
0830		I			
0900					
0930					
1000	I		I		
1030					
1100					
1130	I				
1200					
1230					
1300					
1330					
1400	I				
1430	**I**				
1500					
1530		**I**			
1600		I			
1630		I			
1700					
1730					
1800			I	I'	I
1830				I	
1900					I
1930					I
2000		I	I	I	

This log will be kept daily from 1 May through 30 September or whenever outside temperature exceeds 75° during training hours.

ENCLOSURE (9)

DATE:

B: 90+
R: 89.9 - 88
: 87.9 - 85
G: 84.9 - 80

HEAT CONDITION NOTIFICATION LOG

Time/Temp/Flag		/ /	/ /	/ /	/ /	/ /
Initials						
Unit	Phone #	*Contacted*	*Contacted*	*Contacted*	*Contacted*	*Contacted*
Adjutant, MCB	2152 / 2151					
H & S Bn.	2555 /2556					
TECOM	9577 / 9788					
PMO	4884					
MCU	0135					
MSG Bn.	2082					
MCCS	3006					
MarCorSysCom	2413					

REPORT III, REPORT NAVMED 6500/1

REPORT OF HEAT/COLD CASUALTY
NAVMED 6500/1 (Rev. 3-77) S/N 0105-LF-206-5005

REPORT SYMBOL MED 6500-1

FROM: (Reporting Activity)_____ DATE _____

TO: BUREAU OF MEDICINE AND SURGERY (CODE 561)
DEPARTMENT OF THE NAVY
WASHINGTON, D.C. 20372

NAME	SOCIAL SECURITY NUMBER	GRADE/RATE	AGE	RACE	SEX	BIRTHPLACE
RESIDENCE PTE (Town and State)/Prior DUSTA (Detach. Date)	OCCUPATION (PTE) or Present MOS/NEC			TIME ON ACTIVE DUTY (Months)		
DATE REPORTED TO PRESENT STATION	UNIT TO WHICH ATTACHED					
PRESENT ILLNESS (Onset Date and Time)	WBGT	EXAMINED (Date and Time)	DIAGNOSIS (Check one) ☐ HEAT CRAMPS ☐ HEAT EXHAUSTION ☐ HEAT STROKE ☐ CHILBLAIN ☐ FROST BITE ☐ HYPOTHERMIA			

DESCRIBE BRIEFLY WHAT PATIENT WAS DOING AT TIME OF ONSET AND DURATION OF THIS ACTIVITY (Hours/Minutes)

SYMPTOMS (Check all applicable)			SKIN (Check all applicable)		TEMP (R) INITIAL: EXTREME:	PULSE	RESP.
☐ UNCONSCIOUSNESS	☐ WEAK	☐ ASTHENIA	☐ RED	☐ NORMAL	BLOOD PRESSURE		
☐ DIZZY	☐ NAUSEA	☐ OTHER (Specify)	☐ PALE	☐ OTHER (Specify)	SYSTOLIC	DIASTOLIC	
☐ CONFUSED	☐ CRAMPS		☐ WET		SWEATING (Check one) ☐ EXCESS ☐ MODERATE ☐ NONE		
☐ NUMBNESS	☐ VOMITING		☐ DRY		HEIGHT	WEIGHT	BUILD (Check one) ☐ FAT ☐ MUSCULAR ☐ OTHER
☐ VISUAL DISTURBANCES (Specify)	☐ ANESTHESIA		☐ RASH		OTHER SIGNIFICANT FINDINGS (Urine Sp. Gr., Other Lab. Findings, Specify)		

LAST 24 HOURS (Hours of sleep, number of self tachets) | LAST 12 HOURS (Amount of water, in conventional units; canteens, qts., etc.)

LAST MEAL (Date and Time) | AMOUNT (Check one) ☐ LIGHT ☐ MODERATE ☐ HEAVY

PAST HISTORY OF HEAT/COLD ILLNESS (Specify Type)

DATE (Month and Day)	DIAGNOSIS	NONE

RECENT HISTORY OF SKIN TRAUMA (Specify Type)

DATE (Month and Day)	DIAGNOSIS	NONE

OTHER RECENT ILLNESS

DATE	DIAGNOSIS	NONE

INOCULATIONS WITHIN PAST WEEK (Check)
☐ SMALL POX ☐ TYPHOID ☐ TETANUS ☐ NONE ☐ OTHER (Specify brief, with febrile reactions)

DISPOSITION - PRESENT ILLNESS
☐ HOSPITAL ☐ CLINIC ☐ SINNACLE LIST ☐ LIGHT DUTY | NUMBER OF DAYS | TO DUTY (Date)

REMARKS (Initial treatment, duty-zone treatment personnel, extent of injury, remission)

SIGNATURE

MC, USN

☆ U.S. GOVERNMENT PRINTING OFFICE: 1977—726-000/1 Reverse S-11

ENCLOSURE (11)