



UNITED STATES MARINE CORPS
MARINE CORPS BASES JAPAN
CAMP SMEDLEY D. BUTLER, OKINAWA
UNIT 35001
FPO AP 96373-5001

MCBJO 6200.1
G-4
04 JAN 2005

MARINE CORPS BASES JAPAN ORDER 6200.1

From: Commander, Marine Corps Bases Japan
To: Distribution List

Subj: HEAT INJURY PREVENTION PROGRAM

Ref: (a) MCO 6200.1E W/CH 1
(b) NAVMED P-5010
(c) Automated Heat Stress System (AHSS) Ashore Platform,
Technical Manual Model 19506-485

Encl: (1) AHSS General Description
(2) AHSS Contact Information
(3) Heat Conditions and Limitation of Activities
(4) Prevention, High Risk Identification, and Treatment of Heat
Casualties

1. Situation. The wet bulb globe temperature (WBGT) index reading is the standard used as an indicator of external heat stress on the human body. The heat index reading is in effect each year from 1 May through 31 October. Commanders may direct and impose the monitoring of heat conditions year round.

2. Cancellation. BO 6200.7H w/Ch 1

3. Summary of Revision. This order has been reformatted and contains major administrative changes that comply with reference (a) and include information on the AHSS.

4. Mission. To establish procedures to automate the notification and tracking process for heat conditions and to provide instructions on the prevention and treatment of heat casualties at Marine Corps Bases Japan.

5. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent. Within the guidelines of references (a) and (b), ensure Commanders and tenant activities are educated regarding the prevention, high risk identification and first aid treatment of exertional heat illnesses (EHI). Coordinate between tenant units and appropriate agencies for training as required and/or requested.

Per enclosures (3) and (4), and in addition to the detailed guidance provided by reference (a) and (b), limit activities with regards to acclimatization of newly arrived personnel and provide basic information on the prevention and treatment of heat injuries.

(2) Concept of Operations

(a) Camp/Station Commanders. Camp/Station Commanders, to include the OIC Ie Shima Detachment will:

1 Coordinate the maintenance and operation of the AHSS site to include the retention of the historical database for the WBGT heat index. A typical AHSS site is depicted in enclosure (1). AHSS site and flagpole information are listed in enclosure (2).

2 While the heat index reading is in effect from 1 May through 31 October for Okinawa based units, ensure that a link to the AHSS is maintained year round to the MCB Camp Butler web site. Starting at 0400 daily, hourly readings of the heat index recordings from the AHSS will be used for posting the appropriate flag conditions.

3 Ensure that an appropriate flag is flown from a flagpole at each camp/station area to indicate the effective heat index readings WBGT as noted below (flags are available through the supply system):

<u>Temp</u>	<u>Flag</u>
80 - 84.9	Green Flag
85 - 87.9	Yellow Flag
88 - 89.9	Red Flag
90 - Above	Black Flag

4 Ensure that your commands are properly posting and disseminating heat stress conditions and units receiving this information are properly using it.

b. Subordinate Element Missions

(1) Assistant Chief of Staff, G-6/Public Affairs Officer. Coordinate with Okinawa based camp/station commanders and maintain a web page incorporating the heat index readings as sourced from the AHSS program by camp/station.

(2) Officer-In-Charge, Base Range Detachment. Notify units in the field of the index reading. All units to the south of Ginoza Dam receive the Camp Hansen reading and units north of the Ginoza Dam receive the Camp Schwab reading.

(3) Preventive Medicine Department, United States Naval Hospital (USNH), Camp Lester. Conduct periodic evaluations of AHSS sites and camp/station recording procedures and provide recommendations regarding heat injury prevention and treatment.

(a) The U.S. Naval Hospital, aid stations and clinics will be prepared to treat heat injuries, to include the use of artificial cooling devices. Artificial devices will also be employed in ambulances.

(b) Establish and implement a uniform system for identifying Marines and Sailors that have had prior heat related injuries.

(c) The Preventive Medicine Department will conduct periodic evaluations of AHSS sites and camp/station recording procedures and provide recommendations regarding heat injury prevention and treatment.

(d) The medical department representatives at the USNH Camp Lester, the branch medical clinics and battalion aid stations will report all case of heat exhaustion and stroke to the Preventive Medicine Department, USNH, Camp Lester and each respective base safety office.

(e) The Industrial Hygiene Department, USNH Camp Lester, and Industrial Hygiene Department, Marine Corps Air Station (MCAS) Iwakuni Medical Clinic will assess indoor heat stress considerations as part of Industrial Hygiene surveys conducted on MCBJ facilities. Indoor heat stress evaluations will be conducted by Industrial Hygiene personnel and included in facility workplace monitoring plans when necessary.

(4) Base Units and Tenant Activities. Monitor heat conditions when conducting outdoor activities and training with the applicable regulations and directives with respect to heat injury prevention.

5. Administration and Logistics. Any deviations or requests for changes to this Order must be routed to MCB AC/S G-4 via the chain of command for approval/disapproval.

6. Command and Signal

a. Command. This order is applicable to MCBJ units.

b. Signal. This order is effective the date it is signed.



B. E. TURNER
Chief of Staff

DISTRIBUTION: LIST B

**Automated Heat Stress System (AHSS)
General Description**

The automated heat stress system (AHSS) provides a continuous, on-line measurement of dry bulb (DB) temperature (ambient temperature), globe temperature (GT) (measures the sun's radiant heat) and relative humidity (RH) (measures moisture in the air), and wet bulb (WB) temperature (calculated from the measured DB and RH parameters). Together, these values are automatically fed through specialized software, thus determining the wet bulb globe temperature (WBGT) index. This temperature determines flag conditions. The WBGT is displayed on a computer monitor and updated every sixty seconds.

The GT sensor is mounted on the roof of the weather enclosure in order to measure the outdoor radiant heat from the sun and the ground. The DB and RH sensors are mounted on the AHSS unit located inside the weather enclosure. A fan mounted in PVC piping inserted through the back of the enclosure draws outside air into the enclosure and across the DB and RH sensors. This ensures the DB and RH values (and calculated WB value) are measuring the outside environment.

The AHSS operational system includes an auto-calibration feature that checks the DB, GT and RH values against a known reference standard to determine if the DB, GT and RH sensors are within factory specifications.

Heat index readings are available via the Marine Corps Base, Camp Butler website at www.mcbbutler.usmc.mil.

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AUTOMATED HEAT STRESS SYSTEM (AHSS)
CONTACT INFORMATION

CAMP/STATION	MONITORED BY	UNIT	BLDG#	PHONE#	FLAG(S)
Foster	Camp Services Phone Watch	H&S Bn	5687	645-7315	Bldg (MCB/WING HQ) Bldg 206 (MWSH-1) Bldg 5680 (H&S HQ)
Kinser	Camp Services	H&S Bn	107	637-1886	Bldg 107 (H&S HQ) Bldg 1307 (GYM) Bldg 708 (MRB) Bldg 864 (CDC)
Hansen	Camp Services	CampSvc	2860	623-4649	Bldg 2819 (7 th COMM) Bldg 2494 (PMO) Bldg 2466 (Ranges) Bldg 2814 (3 rd INTEL) Bldg 2539 (31 st MEU)
Courtney	Duty Corpsman	Clinic	4231	622-7309	Bldg 4231 (Clinic)
Schwab	Ops Chief	CampSvc	3403	625-2215	Bldg 3319 (CAB) Bldg 3522 (Regiment) Bldg 1020 (Ammo)
Futenma	Weather Ctr	HQ Sqdrn	510	636-3177	Bldg 159 (Semper Fit) Bldg 509 (Fire House)
Lester	FRONT DESK	Naval Hospital	6021	643-7509	Bldg 6021 (Hospital)
Gonsalves	IDC (Corpsman)	JWTC	500	628-2211	Bldg 508 (BEQ)
Iwakuni	Weather Officer	AirOps	757	253-3005	Bldg 1 (MAG-12 HQ) Bldg 314 (Brks) Bldg 1010 (Gym) Bldg 1641 (MALS-12)
Fuji	Duty Corpsman	BAS	263	224-8381	Bldg 263 (BAS)

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HEAT CONDITIONS AND LIMITATION OF ACTIVITIES

CONDITION IV

WBGT Index: 80 Degrees - 84.9 Degrees - Green Flag

Action: Heavy exercise for unacclimatized personnel should be conducted with caution and under constant, responsible supervision.

CONDITION III

WBGT Index: 85 Degrees - 87.9 Degrees - Yellow Flag

Action: Strenuous exercise such as marching at a standard cadence or "route step" marching at a fast pace should be suspended for unacclimatized troops during their first two weeks of training. Outdoor classes in the sun are to be avoided.

CONDITION II

WBGT Index: 88 Degrees - 89.9 Degrees - Red Flag

Action: All physical training should be halted for those troops who have not become thoroughly acclimatized by at least twelve weeks of living and working in the area. Those troops who are thoroughly acclimatized may carry on limited activity not to exceed six hours per day. Personnel will not be burdened with body armor, field marching packs or similar equipment during this condition.

CONDITION I

WBGT Index: 90 - above - Black Flag

Action: All strenuous nonessential outdoor physical activity will be halted for all units. Essential activities are defined, as those activities associated with scheduled exercises or other major training evolutions 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 reference (b) and in conjunction with the unit's commanding officer, coordinating with the unit's medical officer and/or medical personnel. All efforts should be made to reschedule these activities during cooler periods of the day. Performance of personnel and elective outdoor physical fitness training shall also observe the same strict guidance.

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PREVENTION, HIGH RISK IDENTIFICATION, AND TREATMENT OF HEAT CASUALTIES

1. General. The human body uses energy in its vital processes and during muscular activity. This work energy is transformed into heat energy, which at ordinary temperatures, is radiated from the body to the environment (heat dissipation). If the temperature of the environment is as high or higher than that of the skin, the process is reversed and the body can absorb heat. To counteract this, the body begins to perspire. As the perspiration evaporates, transferring heat from the body to the surrounding air, the body is cooled. Perspiration, however, causes loss of body water and salts, which must be replaced at regular intervals if an individual is to avoid becoming a heat casualty.

2. Prevention. Follow these rules to avoid heat exhaustion and heat stroke during hot weather:

a. Encourage individuals to drink water frequently but limit water intake to 1-1.5 quarts per hour. Infrequent large intakes may lead to stomach distention, vomiting, or serious lowering of sodium levels (hyponatremia). Maximal water intake to prevent exertional heat illnesses should not exceed 14 quarts per day. The need for water may exceed the desire. Ideally, personnel should drink until their urine becomes clear or very pale yellow. Encouragement to maintain proper and prescribed water discipline by medical and USMC leadership is essential in prevention.

b. Stay away from cold drinks while still sweating.

c. The average diet provides the necessary daily salt requirements. Salt tablets should be avoided, unless prescribed and under the supervision of medical personnel.

d. Individuals should wear headgear in the sun and remember that light; loose clothing will actually deflect the sun's heat.

e. Anyone who exhibits mental confusion, cramps, sudden weakness, clumsiness or sudden headache in hot weather should be suspected of having early onset exertion heat illness and receive prompt recognition and evaluation by medical.

f. If an individual stops sweating—GET PROMPT MEDICAL AID.

3. Identification of High Risk Personnel (Medical alerted)

a. Lack of appropriate acclimatization. Proper and gradual adjustment to hot humid weather allows for increased cardiovascular capacity, blood volume as well as allowing the body to sweat at a lower temperature. The content of sodium in sweat also decreases while increasing the sweat rate.

ENCLOSURE (4)

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b. Those who have suffered recent infections, excessive sleep loss, illnesses vaccine reaction or recent alcohol use.

c. Sub-optimal physical fitness. Obesity and/or heavysset habitus (defined as Body Mass Index, or BMI as $> 26\text{Kg/sq M}$ in males only).

d. Prior Heat Illness. The potential for increased susceptibility to recurrent EHI is present and those individuals need to be identified and observed closely during heavy exercise in a hot environment.

4. Controlling Heat Casualties

a. Personnel who are not accustomed to physical activity under current conditions of high temperature are particularly susceptible to heat injury. This is especially true of individuals who are ten pounds or more overweight or in whom there are known other risk factors (paragraph 3(a), (d)). Conditions of high humidity and solar heat increase the possibility of heat injury.

b. Acclimatization and endurance programs for personnel who are climatically and/or physically deficient should be specific in intensity and time. A breaking-in period of one month with progressive degrees of physical exertion and heat exposure will suffice for achieving acclimatization. During this period, the workload should be increased gradually but not to the point of exhaustion or to the point where personnel will be unduly fatigued the following day. Until acclimatized, personnel will lose greater than normal quantities of water and salt. These losses must be replaced. Physical Fitness Testing and group running is to be restricted until fully acclimatized.

c. Although acclimatization increases tolerance for heat, it does not make an individual immune to becoming a heat casualty. Overexertion can lead to heat illness even in mild weather.

d. Special provisions must be made for individuals who are overweight or exhibit any identifiable risk factors.

5. Water and Salt Intake

a. Water intake must be sufficient to replace that lost by sweating. During field exercises in hot weather, this will require and allowance of up to 1-1.5 quart per man per hour if exertional heat illness (EHI) is to be avoided during strenuous exercise in a hot humid environment. All personnel should be trained in proper water discipline and encouraged to be aware of early signs of EHI amongst themselves and fellow Marines and Sailors.

b. Salt replacement for acclimatized troops is normally adequate through their regular meals unless eating is curtailed. Medical personnel must carefully supervise supplementary salt intake, for unacclimatized troops or for any Marine doing heavy work in the heat.

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Extreme caution must be taken not to exceed two grams (roughly equivalent to three salt tablets) of supplemental salt per day. Supplementary salt is not required when subsisting on field rations.

c. If water is not available, salt should not be taken. Salt in concentrated form is not readily absorbed, may upset normal body chemistry and cause gastric irritation or nausea.

6. Rest, Sleep and Recreation During Acclimatization Periods

a. Schedules will call for a 10-minute break every hour. The hour immediately after the noon and evening meals should be devoted to relaxation or non-strenuous training. Seven hours of sleep per 24-hour period is the minimum required for general efficiency.

b. Sleeping, messing and recreation quarters should be screened and well ventilated by either natural or mechanical means. A WBGT Index of more than 80 Degrees F during the night calls for artificial cooling, if possible.

7. Treatment Stations. Field dispensaries will be prepared to treat cases of heat illness. Artificial cooling devices should be employed at treatment stations and in ambulances, whenever possible.

8. Treatment of EHI Casualties. Exertional Heat Illnesses (EHI) are a spectrum of diseases which range from quite mild and non life threatening to severe disease which causes multi-system organ failure and death. The two most common disease types are exertional heat exhaustion and heat stroke. Exertional heat exhaustion occurs when the skin is pale, cool and sweaty. It represents a syndrome of serious dehydration but is usually without serious complication. It is reversible and non-life threatening. Exertional heat stroke (the most common form among military personnel) occurs when the skin is flushed, hot and usually will be dry. Severe headaches and alarming mental status deterioration or frank coma can result in death or brain damage if not properly identified and appropriately treated.

a. Heat Exhaustion

(1) CAUSE. Exposure to high temperatures and humidity. Prolonged work, recent arrival in a hot climate and too much clothing. Solar heat is also an important factor.

(2) SYMPTOMS. Shortness of breath, headache, weakness, dizziness, blurred vision, nausea and muscle cramps may occur. After onset, the casualty will generally have a pale, cool, wet skin.

(3) FIRST AID

(a) Send for medical aid.

ENCLOSURE (4)

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(b) Place casualty in a cool, shady place with circulating air.

(c) Lay casualty down on his/her side with head level or lower than feet.

(d) Loosen clothing and equipment.

(e) If conscious, give liberal quantities of water in small sips.

b. Heat Stroke

(1) CAUSE. Exposure to high temperatures and humidity coupled with loss of ability to perspire. When the perspiring stops, the temperature of the body rapidly increases and builds up to a dangerous level.

(2) SYMPTOMS. Lack of perspiring, weakness, headaches, dizziness, nausea, shortness of breath, faintness or even collapse, may occur before onset. ONSET IS SUDDEN and will be recognized by convulsion, delirium or loss of consciousness. The skin will be flushed, hot and dry. DEATH/BRAIN DAMAGE MAY OCCUR IF BODY TEMPERATURE IS NOT LOWERED.

(3) FIRST AID

(a) Send for or transfer to medical aid immediately.

(b) THE PRIMARY OBJECTIVE IS TO LOWER THE BODY TEMPERATURE AS QUICKLY AS POSSIBLE.

(c) Move the casualty to a cool, shady place with circulating air. DO NOT attempt to make the individual drink. Lay victim on side to avoid possible airway problems if vomiting occurs or water is spilled into nose/airway.

(d) Loosen clothing and equipment.

(e) Apply cool water or ice water to entire body. Be careful to avoid nose and mouth.

(f) Fan the patient constantly to promote cooling of the body by evaporation of applied water.

(g) Individuals with exertional heat stroke are more likely to have a blood clotting disorder, lactic acid buildup, and muscle tissue breakdown. Intravenous access and a 2-liter normal saline fluid bolus are absolutely essential.

ENCLOSURE (4)

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(h) If possible, wrap the patient in sheets that are continuously wetted with ice water. Ice Packs at the points of major heat transfer (groin, armpits, chest) may further accelerate cooling.

(i) Emergent consultation with the Naval Hospital Emergency Medicine Department is essential to determine the most appropriate, nearest medical treatment facility.

ENCLOSURE (4)