

**BY ORDER OF THE  
509TH BOMB WING COMMANDER**

**WHITEMAN AIR FORCE BASE  
INSTRUCTION 48-103**



**19 MARCH 2014**

***Aerospace Medicine***

***HEAT AND COLD STRESS GUIDANCE***

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements Air Force Policy Directive (AFPD) 48-1, *Aerospace Medicine Enterprise*, Air Force Pamphlet (AFPAM) 48-151, *Thermal Injury* and provides guidance on the prevention of heat and cold stress related injuries. This instruction applies to all Whiteman Air Force Base (AFB) commanders, non-bargaining unit supervisors, and non-bargaining unit personnel engaged in or responsible for activities where thermal stress is of concern. Bargaining unit personnel will follow procedures as outlined in Labor Management Agreements. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records* and disposed of in accordance with the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afirms/afirms/>.

***SUMMARY OF CHANGES***

This office now receives outside ground temperature and wind speed from base weather. Command Post will now notify squadrons using any communication networks as needed. Replace Table **A3.1** and Table **A3.2**.

**1. Overview.** This instruction provides background information and direction to commanders, supervisors and individuals on the measurement and prevention of thermal injuries.

**2. Heat Stress Responsibilities and Procedures.**

2.1. 509th Operations Support Squadron Weather Flight (509 OSS/OSW), 687-3061 will contact 509th Medical Operations Squadron Bioenvironmental Engineering Flight (509 MDOS/SGOJ) from March through May and 15 September through 30 November, when the ambient temperature could potentially reach 85° F, at which time 509 MDOS/SGOJ will start Web Bulb Globe Temperature (WBGT) monitoring.

2.2. 509 MDOS/SGOJ, 687-4324 shall:

2.2.1. Ensure heat stress guidance is available to shop personnel through Air Force Occupational Safety and Health (AFOSH) inspections at the shop level.

2.2.2. Set up and monitor the WBGT instrument daily from 1 June to 15 September.

2.2.3. Set up and monitor the WBGT instrument March through May and 15 September through 30 November when ambient temperature reaches 85° F.

2.2.4. Report the WBGT to the 509th Bomb Wing Command Post (509 BW/CP) during normal duty hours, Monday through Friday from 0730 – 1630, every 2 hours. Readings may be reported hourly when the WBGT reads 95° F. A final reading will be reported to 509 BW/CP at 1600 each duty day that monitoring is required and will expire at 1800 the same day.

2.2.5. Update WBGT on the base SharePoint site, <https://whiteman.eis.af.mil/int/WBGT/default.aspx>, concurrently with reporting instructions listed in paragraph 2.2.4.

2.2.6. WBGT monitoring will not typically be provided by 509 MDOS/SGOJ on weekends or other non-duty days. The number of units and personnel performing outdoor work meeting the moderate and hard work criteria as noted in **Attachment 2** is expected to greatly diminish during these timeframes. If a unit anticipates moderate or hard outdoor workload on a weekend or other non-duty day and would like assistance with heat stress guidance, they can contact the Bioenvironmental technician on-call through 509 BW/CP.

2.3. 509 BW/CP, 687-3778 shall:

2.3.1. Relay the WBGT to 509th Bomb Wing (509 BW) squadron commanders through the radio net.

2.3.2. Contact the 442d Fighter Wing Command Post (442 FW/CP), 687-3564 with the WBGT.

2.4. 442 FW/CP, 687-3564 will relay the WBGT to 442d Maintenance Operations Flight Maintenance Operations Center, 687-1250; 303d Fighter Squadron, 687-2741 and squadron commanders through the applicable radio net.

2.5. Squadron commanders shall:

2.5.1. Ensure that heat stress programs are implemented throughout their organizations.

2.5.2. Relay the WBGT to their respective squadrons down to the shop supervisors.

2.6. Shop supervisors shall:

2.6.1. Implement heat stress guidance at the shop level per **Attachment 2**.

2.6.2. Brief personnel during late spring and summer months on heat stress in safety meetings and follow the guidance provided.

### 3. Cold Stress Responsibilities and Procedures.

3.1. 509 MDOS/SGOJ shall:

3.1.1. Obtain outside ground temperature and wind speed from 509 OSS/OSW or the 509 OSS/OSW JET Server (<https://owsjet26.us.af.mil/portal/private/GuestWhitemanAFB/Sensor>) during normal duty hours, Monday through Friday from 0730 – 1630, and determine the wind chill temperature and frostbite risk level (FRL) using Table A3.1.

3.1.2. Notify 509 BW/CP of the resulting FRL.

3.2. 509 BW/CP shall:

3.2.1. Obtain outside ground temperature and wind speed from the 509 OSS/OSW JET Server (<https://owsjet26.us.af.mil/portal/private/GuestWhitemanAFB/Sensor>) after 1630, Mon – Fri, and on weekends and determine the wind chill temperature and frostbite risk level (FRL) using Table A3.1.

3.2.2. Relay FRL information using the base communications networks as needed.

3.3. 509 BW squadron commanders shall:

3.3.1. Ensure wind chill guidance is implemented throughout the squadron.

3.3.2. Relay wind chill information to respective squadrons down to the shop supervisors.

3.4. Shop supervisors shall:

3.4.1. Ensure workers wear cold protective clothing appropriate for the level of cold and physical activity at temperatures below 40° F.

3.4.2. Ensure gloves are worn or metal handles are covered with an insulating material when the ambient temperature is 30° F or less.

3.4.3. If heavy work is done (shoveling, etc), encourage workers to change into dry clothing, prior to re-entering a cold environment or going into a cold environment.

3.4.4. Ensure workers handling evaporative liquids such as gasoline, alcohol or cleaning fluids at temperatures below 40° F take special precautions to avoid soaking clothes or gloves due to evaporative cooling of the liquids.

3.4.5. Implement the buddy system at minus 25° F or when the equivalent wind chill temperature is reached.

3.4.6. Implement personnel protective measures as listed in Table A3.2.

3.4.7. Brief shop personnel during fall and winter safety meetings on wind chill factors and following the guidance provided.

3.4.8. At temperatures below 36° F, if a worker becomes immersed in water or their clothing becomes wet, encourage them to change their clothing immediately and seek treatment for hypothermia.

GLEN D. VANHERCK  
Brigadier General, USAF  
Commander

## Attachment 1

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

*References*

AFMAN 33-363, *Management of Records*, 01 March 2008

AFPAM 48-151, *Thermal Injury*, 18 November 2002

AFPD 48-1, *Aerospace Medicine Enterprise*, 23 August 2011

*Prescribed Forms*

No Forms Prescribed

*Adopted Forms*

AF Form 847, *Recommendation for Change of Publication*

*Abbreviations and Acronyms*

**442 FW/CP**—442d Fighter Wing Command Post

**509 BW**—509th Bomb Wing

**509 BW/CP**—509th Bomb Wing Command Post

**509 MDOS/SGOJ**—509th Medical Operations Squadron Bioenvironmental Engineering

**509 OSS/OSW**—509th Operations Support Squadron Weather Flight

**AFB**—Air Force Base

**AFMAN**—Air Force Manual

**AFPAM**—Air Force Pamphlet

**AFPD**—Air Force Prescribing Directive

**AFRIMS**—Air Force Records Information Management System

**FRL**—Frostbite Risk Level

**OPR**—Office Primary Responsibility

**RDS**—Records Disposition Schedule

**WBGT**—Web Bulb Globe Temperature

## Attachment 2

## HOT WEATHER GUIDANCE

Table A2.1. Guidelines for Average Acclimatized Personnel.

Heat Cat/Flag Color	WBGT (F)	EASY WORK		MODERATE WORK		HARD WORK	
		Work Rest Cycle	Water Intake Qt/hr	Work Rest Cycle	Water Intake Qt/hr	Work Rest Cycle	Water Intake Qt/hr
1	78 – 81.9	No Limit	0.5	No Limit	0.75	40/20 min	0.75
2	82 – 84.9	No Limit	0.5	50/10 min	0.75	30/30 min	1.0
3	85 – 87.9	No Limit	0.75	40/20 min	0.75	30/30 min	1.0
4	88 – 89.9	No Limit	0.75	30/30 min	0.75	20/40 min	1.0
5	> 90	No Limit	1.0	20/40 min	1.0	10/50 min	1.0

Table A2.2. Guidelines for Average Un-acclimatized Personnel.

Heat Cat/Flag Color	WBGT (F)	EASY WORK		MODERATE WORK		HARD WORK	
		Work Rest Cycle	Water Intake Qt/hr	Work Rest Cycle	Water Intake Qt/hr	Work Rest Cycle	Water Intake Qt/hr
1	78 – 81.9	No Limit	0.5	50/10 min	0.75	30/30 min	0.75
2	82 – 84.9	No Limit	0.5	40/20 min	0.75	30/30 min	1.0
3	85 – 87.9	No Limit	0.75	30/30 min	0.75	20/40 min	1.0
4	88 – 89.9	50/10 min	0.75	20/40 min	0.75	10/50 min	1.0
5	> 90	40/20 min	1.0	10/50 min	1.0	Not allowed	Not applicable

**Note:** When performing work/exercise with ground crew ensemble, fire-fighting gear or other similar clothing, add 10 degrees F to the measurement before using Table A2.1 or Table A2.2. Add 15 degrees WBGT if also wearing combat armor.

Table A2.3. Guide to Determination of Workload.

EASY WORK	MODERATE WORK	HARD WORK
Walking on hard surface @ 2.5 mph with ≤30 lb load	Walking on hard surface @ 3.5 mph with ≤40 lb load	Walking on hard surface @ 3.5 mph with ≥40 lb load
Weapon Maintenance	Walking on loose sand @ 2.5 mph with no load	Walking on loose sand @ 2.5 mph with load
Drill and Ceremony	Patrolling	
Manual of Arms	Low crawl, high crawl	
Marksmanship Training	Defensive position construction	

	Field Assaults	
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Attachment 3

WIND CHILL TEMPERATURE INDEX REFERENCE VALUES

Table A3.1. Wind Chill Temperature Index.

Wind (kts)	Wind (mph)	Temperature (°F)																		
		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	
Calm	Calm	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	
4	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	
9	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72	
13	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77	
17	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81	
22	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84	
26	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87	
30	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89	
35	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91	
39	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93	
43	50	26	19	12	4	0	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	
48	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
52	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	

Note: Frostbite times are for exposed cheek skin.

Frostbite Times:

30 Minutes

10 Minutes

5 Minutes

A3.1. Frostbite Risk.

A3.1.1. LOW – Freezing is possible, but unlikely (WHITE).

A3.1.2. HIGH – Freezing could occur in 10 – 30 minutes (LIGHT GREY).

A3.1.3. SEVERE – Freezing could occur in 5 – 10 minutes (MEDIUM GREY).

A3.1.4. EXTREME – Freezing could occur in <5 minutes (DARK ).

Table A3.2. List of recommended preventative measures to decrease frostbite risk.

Frostbite Risk Level	Preventive Measures
Low	<ul style="list-style-type: none"> <li>• Recommended W/R cycle: 50 minutes work/10 minutes warming</li> <li>• Increase surveillance with self and buddy checks.</li> <li>• Wear appropriate layers and wind protection for the work intensity.</li> <li>• Cover exposed flesh if possible.</li> <li>• Wear VB boots below 0 °F.</li> <li>• Provide warming facilities below 20 °F.</li> <li>• Avoid sweating.</li> </ul>
High	<ul style="list-style-type: none"> <li>• Recommended W/R cycle: 40 minutes work/20 minutes warming</li> <li>• Mandatory buddy checks every 20–30 minutes.</li> <li>• Wear appropriate layers and APECS. Protect head, face and hands.</li> </ul>

	<ul style="list-style-type: none"> <li>• Cover exposed flesh.</li> <li>• Wear VB boots below 0 °F.</li> <li>• Provide warming facilities.</li> <li>• Avoid sweating.</li> </ul>
Severe	<ul style="list-style-type: none"> <li>• Recommended W/R cycle: 30 minutes work/30 minutes warming</li> <li>• Mandatory buddy checks every 10 minutes.</li> <li>• Wear appropriate layers and APECS or cold weather parka. Protect head, face and hands.</li> <li>• Wear VB boots.</li> <li>• Provide warming facilities.</li> <li>• Work groups of no less than two personnel.</li> <li>• No exposed skin.</li> <li>• Stay active.</li> <li>• Avoid sweating.</li> </ul>
Extreme	<ul style="list-style-type: none"> <li>• Mission critical work only due to extreme risk.</li> <li>• Keep task duration as short as possible.</li> <li>• Wear appropriate layers, cold weather parka and wind protection. Protect head, face and hands.</li> <li>• Wear VB boots.</li> <li>• Provide warming facilities.</li> <li>• Work groups of no less than two personnel.</li> <li>• No exposed skin.</li> <li>• Stay active.</li> <li>• Avoid sweating.</li> </ul>

**Note:** Work/Rest (W/R), Vapor Barrier (VB), All Purpose Environmental Clothing System (APECS)