DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
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MEMORANDUM FOR

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FROM: AFMOA/CC
110 Luke Avenue, Room 405
Bolling AFB, DC 20332-7050

SUBJECT: Cold Weather Work and Rest Schedules

Effective immediately, the attached Wind Chill Temperature (WCT) Index, Work Practice Guidance and Determination of Workload charts are to be used when establishing cold weather work and rest schedules for USAF personnel. The charts are derived from a technical analysis undertaken by the staff of the US Army Research Institute of Environmental Medicine (USARIEM) published in USARIEM Technical Note No.TN/02-2.

The WCT Index was introduced on 1 Nov 01 and represents equivalent chill temperatures for the winter season 2001-2002 only, since it will be updated as further scientific data is gathered over the coming year. The USAF Meteorological Service has adopted the WCT Index.

Finally, when establishing appropriate work and rest schedules, it remains the Commander's responsibility to establish those tasks that are mission critical as part of the operational risk management process.

My POC for this issue is Wing Commander Victor Wallace, AFMOA/SGZA, 110 Luke Avenue, Room 405, Bolling AFB, DC 20332-7050, DSN 297-4200, e-mail victor.wallace@pentagon.af.mil

GARY H. MURRAY, Brig Gen, USAF, DC
Commander
Air Force Medical Operations Agency
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Attachment:
WCT Index, Work Practice Guidance and
Determination of Workload

cc:
HQ USEUCOM/ECMD
USCENTCOM/CCSG

Attachment 1

Table A1-1: The Wind Chill Temperature (WCT) Index Chart (Winter 2001/02)[1]

Calculation is based upon: **WCT (°F) = 35.74 + 0.6215T - 35.75($V^{0.16}$) + 0.4275T($V^{0.16}$)** ; T is Temperature in Degrees F and V is wind speed in mph, measured by anemometer at 33 feet. If the wind speed is measured at ground level, multiply by 1.5 to obtain wind equivalent wind speed at 33 feet, then utilize chart.

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

(Frostbite Risk in Dry, Exposed Skin: Little Danger (Green) Frostbite may occur in >2 hours exposure; Increased Danger (Yellow) Frostbite may occur in ≤ 45 minutes exposure; Great Danger (Red) Frostbite may occur in ≤ 5 minutes exposure).

Note: The WCT charts are worst case approximations based on mathematical models and data derived from limited human studies. The exact effect of cold exposure on an individual will vary depending on the actual activity level, length of exposure, moderating effects of clothing or partial shelter from the wind and overall physical state. The chart is dated to indicate that this is the first winter of issue (2001-2002). WCT values are subject to modification as additional human data or other new information becomes available. Freezing cold injury can occur anytime temperatures (air or surface) fall below freezing (32°F). However, the likelihood and severity of injury will increase with prolonged exposure to lower temperatures and greater air velocity, whether it is due to vehicle speed or actual wind. WCT is an indication of the combined effects of wind and colder air temperature. Individual level of activity, protective clothing, partial shelter from the wind, and overall fitness may alter the actual impact of cold exposure. Even when temperatures are above freezing, prolonged exposure to cold and wind may result in hypothermia or non-freezing cold injury (chilblains or trench foot).

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[1] Color codes and work practice guidance derived from USARIEM Technical Note TN/02-2 dated Oct 01

Table A1-2: ORM Working Practice Guidance in Cold Environment[2]

Work Intensity[3]	Required Precautions and Hourly Work/Warming Cycle[4]		
	Little Danger	Increased Danger	Great Danger
Hard	Close observation by supervisors, black gloves optional; mandatory below 0°F (-18°C)	ECWCS or equivalent; mittens with liners; exposed skin kept covered and dry, rest periods in warm, dry shelter.	Postpone non-essential activities; essential tasks only with <15 minutes exposure, all exposed skin covered
Moderate	Increased surveillance; cover exposed skin where possible; mittens with liner below 10°F (12°C); keep skin dry	As above plus restrict non-essential tasks; operate 30-40 minute work cycles with frequent supervisory surveillance	Mission critical activity only[5]
Easy	Moderate workload precautions plus full head coverage below 10°F (-12°C); cold weather boots below 0°F (-18°C); shorten duty cycles and provide warming facilities	Cancel or postpone all non-essential activities; 15-20 minute work cycles for essential tasks; work groups of no less than 2 personnel, no exposed skin	Mission Critical Activity only

[2] Work practice guidance derived from USARIEM Technical Note TN/02-2 dated Oct 01
[3] See Table A1-3 for workload guidance.
[4] Warming must be in an indoor, heated environment.
[5] Commander will determine mission critical tasks

Table A1-3: Guide to Determination of Workload

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