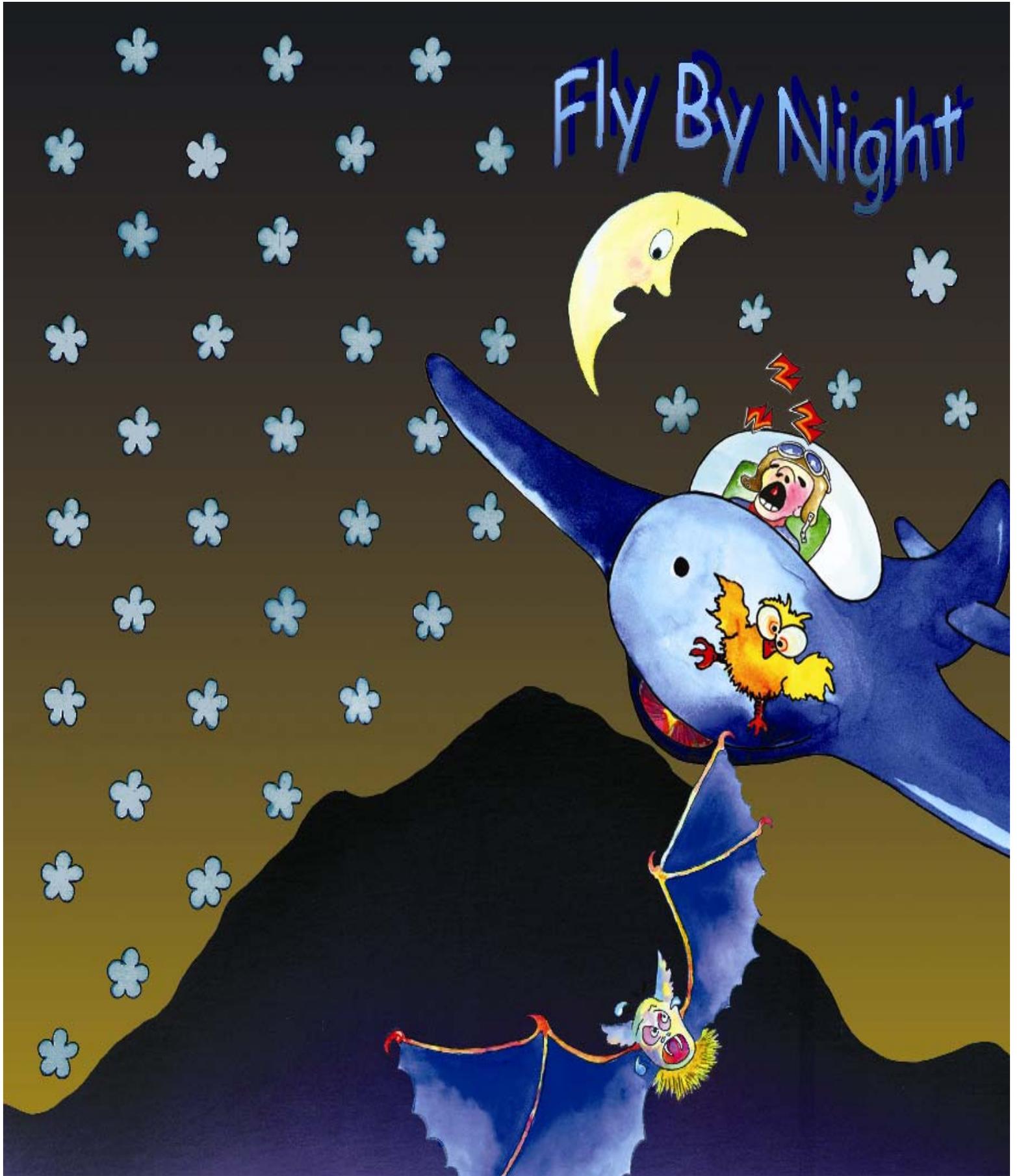


# Fly By Night!



# FLY BY NIGHT

## Are you a shift worker?

Often aviators and flight crewmembers are required to fly at various times in a 24-hour day.

They may need to alter their work hours from day to night, early morning, or late evening. When this rotation occurs, the aviator becomes a "shift worker."

## Why is shift work so difficult?

Individuals must alter their normal work and sleep hours from typical work/rest patterns. Biological, circadian, and social factors all must be considered. Sleeping and working at nonstandard times interrupts the body's natural rhythm and daily schedule. This creates fatigue, irritability, and sometimes, physical discomfort.

## Will I encounter problems?

Absolutely! Almost every person who works varying schedules feels sleepy and tired on the job. They have difficulty sleeping when work schedules constantly change. This is normal because night activity and day sleep are in contrast to the body's natural programming.

# How do circadian rhythms work?

The rhythms of wake and sleep, hormonal secretions, performance, and core body temperature rise and fall in predictable patterns over a 24-hour day. As the day begins, body temperature, alertness, and performance rise. This continues into the mid-afternoon, dipping slightly, and then falling as the day ends and night begins. The lowest point in these measures occurs between 0200 and 0600. In contrast, sleepiness declines the day begins, slightly in mid-afternoon, then steadily increases as the day ends and night begins. The ability to go to sleep and stay asleep becomes more difficult as the day progresses. Sleep is always easier to obtain at night.



## What is affected?

Many activities are affected when work/ sleep schedules are changed. These include work productivity, safety, health, and family and social life.

**Work Performance.** Due to changing schedules, an aviator may frequently feel sleepy. When sleepiness increases, performance levels decrease. Attention, accuracy, and motivation decrease. Night shift productivity decreases by 30 percent.



**Safety.** Accidents increase during the night shift. Aviators who fly at night or in the early morning are more likely to have serious accidents.

**Health.** Most individuals need a fairly constant schedule of work and sleep to avoid physical and mental stress. When meals, exercise, and sleep constantly change, the entire physical system reacts. Irregular meal times disrupt the rhythms of digestion. Physical stress can lead to heart and blood pressure irregularities. Psychological stress contributes to family problems and social difficulties. Lack of a consistent sleeping schedule can lead to insomnia, sleepiness, and sleep deprivation.

**Family and Social Life.** Feelings of fatigue and sleepiness experienced when working different shifts can lead to problems in your home and social life. Spouses and children may feel neglected. Shift workers may feel too tired to participate in family activities. Participating in social activities is also difficult since schedules do not allow consistent involvement. This could lead to feelings of social isolation.



## What interferes with daytime sleep?

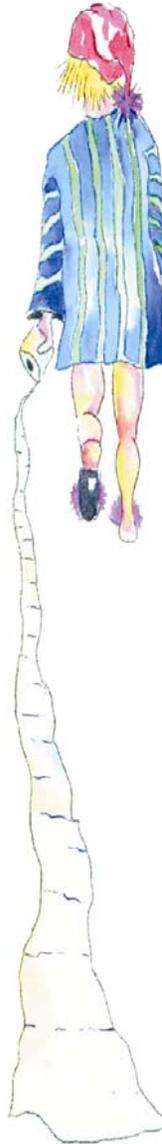
- Sunlight. (It increases alertness and helps reset the natural 24-hour rhythm to daytime activity, nighttime sleep.)
- Noise Levels. (Delivery trucks, construction noise, and traffic all increase during the day.)
- Psychological Feelings. (A feeling of being "lazy" while others are awake and working.)
- Daytime Demands. (Family members may expect work or errands to be accomplished when you should be sleeping.)

Job Responsibilities. (Aviators may be requested to return to work during daytime hours to accomplish flight planning, records review, or administrative tasks.)



## Can I make daytime sleeping easier?

Yes. The suggestions listed below may help to improve sleep during the day (and, as a result, alertness at night):



- Avoid caffeine 4-6 hours before the morning bedtime.
- Avoid sunlight after a night shift by wearing dark sunglasses while driving home.
- Avoid sunlight as much as possible until your sleep period is complete. (Don't go outside if you wake up during the day.)
- Relax before sleep time; avoid activities that are stimulating such as social-izing and house/yard work.
- Avoid alcohol for at least 3 hours before bedtime.
- Avoid strenuous exercise at least 3 hours before bedtime.
- Get a minimum of 6 hours of sleep; take naps if you cannot get enough sleep at one time.
- Notify family and friends of your sleep schedule.

## Will my sleep be interrupted?

Many day sleepers wake up about 3 hours into their sleep period and have difficulty going back to sleep. Here are a few suggestions to make daytime sleep better.

- Make sleep a priority.
- Adhere to a planned sleep schedule.
- Sleep in your regular bedclothes and in your usual bed.
- Have a comfortable mattress and pillow.
- Make the bedroom cool and dark.
- Remove the phone from the room and discourage daytime visitors.
- Disconnect the doorbell and hang a sign indicating a shift worker is sleeping.
- Use earplugs and a masking noise such as a fan to cover outside distractions.
- Tell your family and friends when you'll be sleeping.



7



## So how do I stay awake at night?

Good daytime sleep will increase alertness at night; however, shift workers cannot completely trick the body into being alert during a night shift. The body can adapt somewhat to staying awake all night, but it takes many days of a strict schedule before a full adjustment occurs. Most shift workers are rotated off the night shift by the time this happens. These suggestions may improve alertness at night:

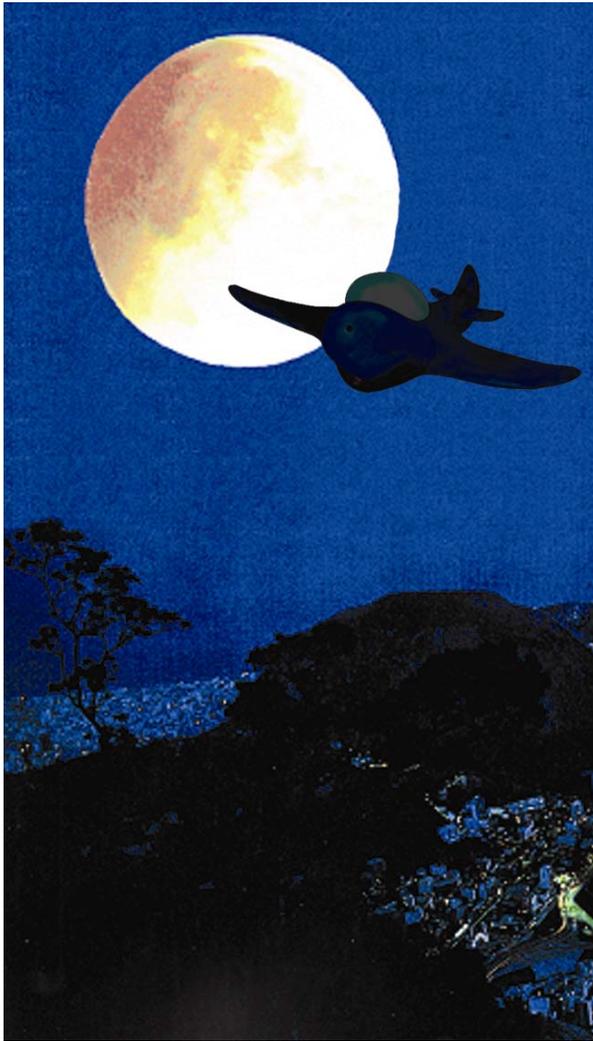
- Use caffeine as a stimulant when needed.
- Eat low carbohydrate, low fat, and high protein foods.
- Use social interactions and physical activity to help stimulate you in your work environment.
- Stay cooler than usual.
- Gradually adjust your sleep time before going on night shift.

Nap as much as possible before the night shift begins.

8

# Take control of the night!!!!

Know the dangers of inadequate sleep. Your personal safety may well depend on how well you have managed your sleep and work schedules. The suggestions given in this brochure can aid in overcoming the problems you may encounter during night flying.



J. Lynn Caldwell, Ph.D.  
Senior Research Psychologist  
U.S. Air Force Research Laboratory  
Brooks City-Base, TX

US Army Medical Research & Materiel Command  
Fort Detrick, MD



Edited by Linda M. Burt  
Illustrated by John D. Sowell

June 2002



For More information contact the Center for  
Operational Performance Enhancement (COPE) at:  
[USAFSAM.COPE@brooks.af.mil](mailto:USAFSAM.COPE@brooks.af.mil)

The views, opinions, and/or findings contained in this brochure are those of the author and should not be construed as an official Department of Defense position, policy, or decision.

