

Published in the United States of America by

Emergency Response International

May, 2009

The Material, text, and art included in this hanbook is copyrighted. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the express written permission of the copyright holder. (Emergency Response International)

Project Managers, Editing, Layout & Design :

Robert “Skip” Stoffel

Brett C. Stoffel



Published by Emergency Response International
ERI Publications & Training
319 Olive Street
Cashmere, Washington 98815

Table of Contents

| | | |
|----|---|-----|
| 1 | Introduction | 1 |
| 2 | Fundamental Concepts of Survival | 5 |
| 3 | Survival Medicine | 15 |
| 4 | Clothing and Personal Protective Equipment..... | 46 |
| 5 | Improvising | 52 |
| 6 | Cockpit Fire and Smoke Management | 73 |
| 7 | Emergency Landing and Ditching..... | 77 |
| 8 | Land Survival - Shelter..... | 83 |
| 9 | Land Survival - Fire | 98 |
| 10 | Land Survival - Drinking Water | 107 |
| 11 | Sea Survival..... | 124 |
| 12 | Signaling Distress..... | 141 |
| 13 | Search and Rescue..... | 154 |
| A | Appendix A - Equipment and Kits | 158 |
| | Survival Kit | 158 |
| | Personal First Aid Kit..... | 159 |
| | Personal Utility, & Supplemental Contents..... | 159 |
| | Winslow Life Raft Survival Equip. Package..... | 137 |

Introduction

1

PURPOSE

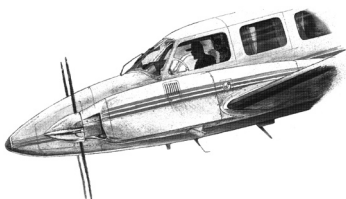
The purpose of this handbook is twofold: it should be used (1) for preflight planning to prepare for potential search, rescue, and/or survival situations, and (2) as a practical field guide for dealing with a variety of problems and challenges encountered in an actual survival situation. It should be clear that this document is *not* intended to replace aviation operational and emergency checklists.

DOCUMENT ORGANIZATION

This document is organized into 14 chapters and one appendix. Each chapter addresses a specific survival topic or area of concern in a survival situation. With the exception of the first two chapters, each is then divided into two separate sections. Chapter 2 includes the fundamentals of survival and should be reviewed at least biannually (twice a year).

The first section of each chapter serves as a practical field guide for use in a survival situation. This guide will include specific suggestions, checklists, and procedures to improve survivability and aid in rescue. This section of the chapter will be indicated by the words **- Field Guide -** in the bottom center of the page.

The second section of the chapter serves as a survival planning checklist that is intended to be reviewed before each flight. This will serve as a preflight checklist for each topic. This section of the chapter will be indicated by the word **- Planning -** in the bottom center of the page.



Field Guide

When an aviator finds him/herself in a survival situation after a forced landing, or for any other reason, this section can be used to offer directions and suggestions for appropriate actions.

In establishing an effective, rational response to any survival situation, it is imperative to prioritize actions and needs. During the initial stress and confusion of an incident, preconceived but inaccurate notions about survival can generate incorrect priorities and actions with disastrous results. The decisions made in the first few minutes or hours of an emergency have a great bearing on the ultimate outcome. The use of guides such as those included in this document can reduce errors in prioritizing and substantially improve chances of survival.

This handbook describes essential priorities for survival and the basic skills needed to maximize your chances for survival. It will help you to prepare ahead of time, properly utilize the resources at hand and apply essential tools or concepts necessary in specific situations.



Pre-Flight Planning

On a frequent basis, and perhaps before each flight, the planning section of each applicable chapter should be reviewed to ensure that pilots and passengers are able to perform as expected in the event of a survival situation, and that all necessary equipment is checked, operational and accessible.

Research shows that survival planning before a flight has a distinct and positive impact on survivability. Planning should include:

- familiarization and equipment checks
- review of field and survival planning checklists
- establishing contingencies and survival strategies
- thorough pilot and passenger briefings about safety equipment and procedures
- pilot and passenger assignments and responsibilities during an emergency

Interviews with survivors of aircraft emergencies indicate that equipment not directly attached to the body when an emergency occurs is seldom available after egress from the aircraft. This includes flotation, survival kits, and any other survival equipment.

Proper pre-flight planning includes checking required survival equipment and ensuring that it fits within a garment worn during flight operations, to the greatest extent possible.

“Man can live about forty days without food, about three days without water, about six minutes without air, but only for one second without hope.”

— Hal Lindsey —

MENTAL AND TRAINING FACTORS THAT INFLUENCE SURVIVAL

After the initial “adrenaline rush” of a life threatening situation, the body will slow to rest and repair itself. During this time, the mind must constantly process the body’s surroundings for reaction to new danger. This situational awareness is defined as a “yellow level of awareness” and plays an important role in survival.

When threatened, we all react based on what we have learned and experienced -- we revert to our training. This is why both basic and continued training is so important. Practice indeed makes perfect; but, only if you practice correct actions.

- Survival -

“The ability and desire to stay alive, all alone, under adverse conditions until rescued”



Fundamental Concepts for Survival

2

Necessities of Life in Priority Order

Survival Time if Necessities Not Met

| | |
|--|------------------------------|
| 1. Positive mental attitude (PMA) An “engaged, thinking mind” and a strong “will to survive” | Depends entirely upon you |
| 2. Air | 3 to 6 minutes |
| 3. Shelter from extreme environments | 1 to 4 hours |
| 4. Rest | 48 hours or more |
| 5. Water | 3 days in extremes |
| 6. Food | 3 weeks or more |

PRIORITIES AND NECESSITIES OF LIFE

$$\text{PMA} + 98.6^{\circ} = \text{BCS}$$

Positive Mental Attitude + 98.6 degrees F = Best Chance for Survival

Survival problem solving ties directly to internal body temperature. Because of that, shelter and body protection must be maintained as a very high priority.

Beyond immediate emergency medical care, the following are the major priorities for nearly all survival situations. In long-term incidents, resupply of water may be the only additional necessity added to this list:

- PMA - actions that work toward a positive outcome.
- Preserving the body’s temperature at or near 98.6 degrees F.
- Conserving body energy and resources by only doing that which is absolutely necessary.

PMA stands atop the list of survival priorities in all survival situations. Losing the ability to think rationally or losing our will to live, jeopardizes our very survival. PMA represents much more than thinking positive thoughts, rather it centers on our ability to analyze and prioritize the real threats to survival. A fully engaged mind makes it easier to determine immediate problems, find resources and use those resources to solve problems. Cultivate your PMA through your lifetime with experiences, and hone it with emergency training, knowledge, and hands on instruction.

What affects you mentally,
affects you physically and vice versa!

PRIORITY GUIDELINES FOR MANAGING A SURVIVAL SITUATION

Major Threats to Survival

| Threat | Potential Effect |
|--------------------------|--|
| 1. Your mind | Negative attitude, incorrect priorities, imagination, fear, panic and hopelessness. |
| 2. Temperature | A body core temperature deviation of about 6 degrees either side of the normal 98.6 is considered the limit for effective performance and rational behavior. |
| 3. Injury | Increases susceptibility to the environment. May affect mobility and the ability for self-help / self-rescue. |
| 4. Illness and Infection | Constant threat, normally held in check by the body's defense mechanisms. |

A Phased Approach to Managing Survival Situations

Phase I - *Emergency Response* (immediate through first few hours)

- Emergency medical care for self and others
- Inventory equipment and resources available
- Protect and maintain
 - application of the priorities and necessities of life
 - immediate action shelter
- Signal distress

Phase II - *Continued Life Support*

- Constant risk assessment
- Physiological needs (body management)
- Mental (maintain PMA)
- Emergency response skills (which ones to use?)
- Current and anticipated environments (existing and potential dangers)
- Conserve all resources

Phase III - *Rescue*

- Signaling distress (electronic, visual, plans known to others)
- Develop a rescue plan

KEY MENTAL FACTORS IN SURVIVAL

As mentioned earlier, we all react based on what we have learned and experienced. Coping strategies derive from both positive experiences and good training. This also explains the importance of both initial and continued training in introducing and re-emphasizing certain basic concepts. Frequent training, muscle memory and learned procedures affect performance, but the correct actions must be practiced.

Mentally solving survival problems will come more easily if an individual understands the elementary mechanisms of the human mind and how these mechanisms assist a survivor to stay the course in difficult and hazardous survival situations.

A Fundamental Law of the Mind

As humans, we act, feel, and perform in accordance with what we believe to be true about our surroundings, our personal well being, and situations in which we find ourselves. In terms of survival, we must maintain a clear mental focus on success and not failure. We tend to perceive what we picture in our mind's eye as the truth. So, picture yourself as a survivor, never wavering toward thoughts of failure, and ensure a higher chance of success.

You can only be as successful as you think you will be!

Traits of Survivors from Real Life Experiences:

They . . .

- Had the ability to improvise,
- Strove and prepared for self-reliance and self-sufficiency.
- Were adaptable and could make the best of a poor situation,
- Were usually very patient and remained calm, cool and collected; they perceived themselves as rescuers rather than victims,
- Were usually prepared physically, mentally, or both,
- Were aware of their own fears, shortcomings and attributes and tended to control them, or use them effectively in the situation,
- Had the ability to weigh the facts and make decisions crucial to survival,
- Practiced (beforehand) skills that directly contributed to their survival.



Strategies for Controlling Fear in Self:

1. Don't try to run physically or mentally from the situation.
Recognize fear for what it is: a protective mechanism to sharpen the body's responses. Do something familiar (drink water, sit down, talk to yourself) to calm down.
2. Use positive actions to take control of the situation by weighing the factors and making decisions instead of putting them off.
3. Recognize that everyone has certain fears and that these are normal.
4. Prepare for the worst and hope for the best.
Make a plan and follow through with it.
5. Set realistic goals.
6. Use affirmative self-talk
 - I choose to make the right choices.
 - I am doing well in this situation.
 - I am confident in my ability to make the right decisions.
 - I choose to have a good self-image.
 - Tell yourself what to do.
7. Don't be afraid of spiritual faith—try hard, and pray harder.
8. Continue to gather all the information that you can about your situation. Maintain active situational awareness.
9. Those who have suffered hardship in the past do better than those who have not; they seem to know how to cope in unknown environments with few, if any, resources. Use this fact to your benefit.



The goal is SURVIVAL -
Discomforts and deprivation are only temporary.