

Ocean Risk Management

Why do lifeguards exist?

Who is in the water?

What is dangerous?

Where is it dangerous?

When is it dangerous?

How can it be safe?

Ocean Safety Risk Management concept

Ocean Safety risk management is a systems based concept. It is the application of systemic thinking to the problems associated with making ocean operations safer and more effective.

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Ocean Safety Risk Management concept

- Safety risk management is not a science, it doesn't provide leaders with a precise course of action. Neither is it just "common sense" or "something good leaders have always done." It is an important tool that can be fully integrated into established Incident Command systems for conduct of training and rescue's.. It is more an art than science, but an art based on systematic procedures and specific techniques.

Ocean Safety Risk Management concept.

Risk management concepts are not confined to systems development or tactical operations. They have been applied successfully to other areas of Rescue operations:

Lifeguard Dept.

Fire Dept.

Coast Guard

Police Dept.

Army

Ocean Safety Risk Management concept

How much of a problem a hazard presents can't be determined until the hazard is converted to a risk.

When the hazard is expressed in terms of how likely it is to occur, and how serious the consequences are if it does occur . . . then the officer can make rational decisions about how to deal with that hazard.

Ocean Safety Risk Management concept

Rescue operations require safety risk management to be very flexible.

Leaders must often make tough, complex decisions in a matter of minutes or seconds. Safety risk management must be compressible and adaptable to these time constraints or be left out.

On the other hand, many times we have weeks or months available for planning an operation. The level of detail that goes into the process depends on the time available and the extent of the risk.

Ocean Safety Risk Management concept

– Risk Taking vs. Risk Technician.

- Bold, aggressive risk technicians are needed, admired, and endorsed in ocean Operation.
- Some people admire and endorse risk taker as risk technicians.
- risk takers, if they are successful, are hard to separate from the risk technicians who uses the risk management process to detect and control hazards. But sooner or later the risk takers loses.
- The key difference between the risk takers and the risk technicians is that the risk technicians can reasonably predict the outcome.
- The risk takers are only guessing.

Risk Management

vs.

Risk Taking

*So what is the difference between
risk taking and managing risk?*

The result?

The decision?


The process?

Risk Technician vs. Risk Taking

So what is the difference between risk taking and managing risk?

 **The result? No!**

 **The decision? No!**

 **The process? Yes!** A risk taker will perform an operation without regard to the risk. The risk technician weighs the risk with the mission/ training benefits and makes a good risk decision. He will also put controls on the risks and make the officers involved in the operation aware of the risks and his controls.

- ***Rescue Operations***

- *“Safety is part of all rescue operations and operations other than rescues.. Commanders at all levels should embrace safety as a principal element in all they do. Sustained, high-tempo operations can put officers at risk. Strong command and high levels of discipline and training lessen those risks. Safety procedures represent a skill - a product of enforce standards and training. Safety in training, planning, and operations is crucial to successful rescue operation and the preservation of “Life.”*

Hazard+People=risk

- **Hazard = is a source of danger/Environment/Weather/Objects etc.**
People = stands the chance to be injured or death
Risk = Damage/Destruction,Injury/Death,Financial,Legal
Prevention=can be attainable by removing the hazard or the person/object that exist in the same time or place
Risk reduction = strategies are implemented when prevention cannot be attain,therefor finding ways where Hazards & People need to coexist in the same time & place

- **Elements of a Hazardous Ocean Environment**

- **Tides--Winds--Surf--Climate--Current--Depth-Visibility- Shoreline--Rocky--Cliffs--Sandy--Reefs-**
- **Dangerous Marine life--Sharks--Jelly Fish etc.**

NOTE:

Tactical Training and Rescues are significant contributors to risk. Officers seek to stretch their limits to gain an advantage over the environment though the use of **K .A. T.(Knowledge, Ability, Technology)** and thus reducing the risk factor. Effective risk management will eliminate risk when possible, control residual risk, and allow the operation to accept risk when the benefit outweighs the cost.

— .

Chain of events

- **Person**
 - crawls,walks,runs
- **High Cliff**
 - rolls,slips,jumps,dives
- **Shallow water**
 - hits,slaps,bounces,breaks
- **Sand / Reef**
 - Depending on the age & knowledge the person has on their ability & limitations in dealing with hazards will decide the outcome of the risk.
 - **Minor injury**
 - **Major injury**
 - **Death**

A.C.E.

Decision

Avoid
Hazard
Problem
Situation

Control
Hazard
Problem
Situation

Eliminate
Hazard
Problem
Situation

Categories of Risk

Physical = injury to death.

Financial = loss of income to bankruptcy.

Legal = fines, non-permit, restriction, prison, death.

Environmental = damage, destruction, devastation.

Social = miscommunication, outrage, violence.

Cultural = disrespect, outrage, violence and the unknown.

- **Key Definitions.**

- **Ocean Safety Risk Management** - the application of systematic thinking to the problem of making ocean operations safer (enhancing force protection) and more effective.
- **Hazard** - a condition with the **potential** of causing injury to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

- **Key Definitions.**

- **Risk** - an expression of possible loss over a specific period of time or number of operational cycles.
- **Risk Assessment** - the process of detecting hazards and systematically assessing their overall risk. It involves the first **two** steps of the Risk Management process.

- **Key Definitions.**

- **Risk Management** - a process whereby management decisions are made and actions implemented to reduce the effects of identified hazards.

- **Risk Taking** - Making non-systematic risk decisions.



- Ocean Safety Risk Management Process.
 - **Hazard Identification** - identify the major events in the operational sequence and the hazards associated with all specified and implied tasks.

- Ocean Safety Risk Management Process.
 - **Hazard Assessment** - determine the magnitude of the risk by estimating the probability (frequency) and the effect (severity) if the event occurs.

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- Ocean Safety Risk Management Process.
 - **Risk control options & decisions** - make risk acceptance decisions by balancing the benefits against the risk. Eliminate unnecessary risks and reduce the magnitude of mission-essential risks by applying controls.

- Ocean Safety Risk Management Process.
 - **Implementation** - integrate controls into plans, operations orders (OPORDs), Standing Operating Procedures (SOPs), training performance standards, and rehearsals.

- **Ocean Safety Risk Management Process.**
 - **Supervise** - determine the effectiveness of risk controls by supervising and enforcing controls and standards.

Four Rules of Ocean Safety Risk management.

Integrate risk management into planning.

Accept no unnecessary risks.

Make risk decisions at the proper level.

Accept risks if the benefit outweighs the cost.

Four Rules of Ocean Safety Risk Management.

- Integrate risk management into planning. It's easier to integrate risk management early in the life cycle of any operation (training or rescues).
- **Accept no unnecessary risks.**
- **Make risk decisions at the proper level.**
- **Accept risks if the benefit outweighs the cost.**

- **Four Rules of Ocean Safety Risk Management.**
 - **Integrate risk management into planning.**
 - Accept no unnecessary risks. The key word is “**unnecessary**”. An unnecessary risk is a risk that does not contribute meaningfully to the mission. Leaders who take unnecessary risks are gambling.
- **Make risk decisions at the proper level.**
 - **Accept risks if the benefit outweighs the cost.**

- **Four Rules of Ocean Safety Risk Management.**
 - **Integrate risk management into planning.**
 - **Accept no unnecessary risks.**
 - Make risk decisions at the proper level. The “**proper level**” is the level where the decision maker has the maturity and experience to make a good decision. Normally, this would be the leader responsible for the mission. Decisions should be made at the lowest possible level as long as the decision maker has the experience and maturity to make a good decision.
 - **Accept risks if the benefit outweighs the cost.**

- **Four Rules of Ocean Safety Risk Management.**
 - **Integrate risk management into planning.**
 - **Accept no unnecessary risks.**
 - **Make risk decisions at the proper level.**
 - Accept risks if the benefit outweighs the cost. Ocean operation leaders are in the risk-taking business. There is always risk, and where there is risk, sooner or later there will be an accident, risk management minimizes these accidents.

- **Hazard Probability of a Risk.**

- A risk assessment matrix is an effective tool that can be used to determine how risky an identified hazard is. Standard terms associated with risk assessment matrices include:
 - Probability. How likely an is an event to occur.
 - Effect. Consequences if the event occurs.

Risk Assessment Matrix

| | | | HAZARD PROBABILITY | | | | |
|----------------------------|--------------|-----|--------------------|--------|------------|------------|------------|
| | | | Frequent | Likely | Occasional | Seldom | Unlikely |
| | | | A | B | C | D | E |
| E F F E C T | Catastrophic | I | Extremely High | | High | | Low |
| | Critical | II | High | Medium | | Low | Negligible |
| | Moderate | III | Medium | Low | | Negligible | |
| | Negligible | IV | Low | | Negligible | | |

| | | |
|----------------------------|--------------|-----|
| E F F E C T | Catastrophic | I |
| | Critical | II |
| | Moderate | III |
| | Negligible | IV |

Catastrophic - Death or permanent total disability, system loss, major property damage.

Critical - Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage.

Moderate - Minor injury, lost workday accident, compensable injury or illness, minor system damage, minor property damage.

Negligible - First aid or minor supportive medical treatment, minor system impairment.

- **Hazard Detection Resources.**
 - Experience.
 - Experts.
 - Regulations and Manuals.
 - Accident Data.
 - Scenario Thinking.
 - Hazard Analysis Techniques.

- **Hazard Detection Resources.**
 - **Experience.** Traditional “risk management” is based on experience. Since no two individuals share exactly the same experiences the best way to use “experience” is to get more people involved, brainstorm.
 - **Experts.** Consult with acknowledged ocean experts, lifeguards , marine officers, maintenance officers/technical inspectors, surfers, scientist, etc.

- **Hazard Detection Resources.**
 - **Regulations and Manuals.** Properly developed regulations incorporate lessons learned, input from subject matter experts, as well as command directives.
 - **Accident Data.** The USASC database contains information of more than 250,000 accidents.

- **Hazard Detection Resources.**
 - **Scenario Thinking.** Scenario thinking involves visualizing the flow of an operation, the events that take place, and the things that can go wrong.
 - **Hazard Analysis Techniques.** These techniques provide systematic tools for identification of hazards in an operation (cause and effect diagramming, mathematical modeling).

- **Decision Making Process and the SRM Process.**

- Recognize & Define.----- **ID hazard**

- Gather facts/assumptions.

- Determine scope.

- Analyze & Compare.----- **Assess hazard**

- Select best solution.----- **Risk decision**

- Plan of Action-----**Implement**

- Evaluate ----- **Supervise**

- **Traditional process vs. Risk Management process.**
 - **Traditional Approach**
 - "Common Sense".
 - Random hazard identification and assessment.
 - More omission.
 - Uninformed decision.
 - **Safety Risk Management**
 - Methodical.
 - Less omission.
 - Informed decision.

- **Levels and responsibilities of safety.**
 - **Command level**
 - Plan for safety.
 - Set safety standard.
 - Conduct training consistent with abilities of trainers.
 - Resource safety.
 - Make risk acceptance decisions when you can't eliminate the risk.
 - **Leader level**
 - **Individual level**

- **Levels and responsibilities of safety.**
 - **Command level**
 - **Leader level**
 - Emphasize adherence to standards and accident prevention.
 - Assess and balance risk against training or operational requirements.
 - Recognize then eliminate or control, health and safety hazards.
 - **Individual level**

- **Levels and responsibilities of safety.**
 - **Command level**
 - **Leader level**
 - **Individual level**
 - Understand individual safety responsibilities.
 - Recognize unsafe acts and conditions.
 - Perform to standards.

- **Consequences of failing to manage risks effectively.**
 - **Death and injury to officers, civilian employees, and the public.**
 - **Damage to equipment.**
 - **Mission failure.**
 - **Ineffective training.**
 - **Violations of local, state, and Federal statutes.**
 - **Legal liability.**

- **V. Grose's six-steps to effectively manage risks.**

The steps are listed in logical and progressive order, each should be agreed upon prior to moving to the next one.

Ê Every endeavor, organization, or job has risks.

Ë No one will ever know all the risks.

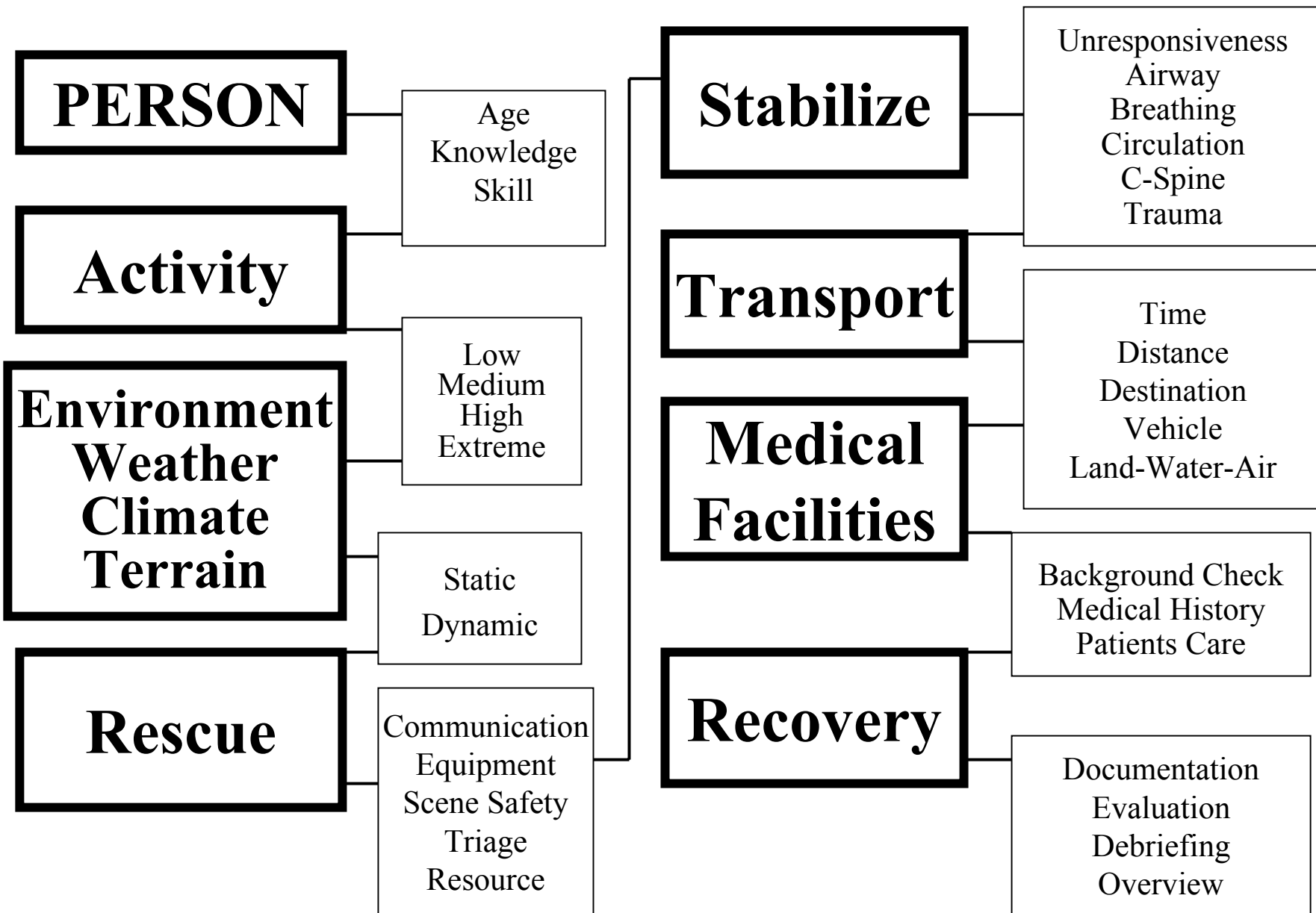
Ì Risks are not equally consequential.

Í All endeavors should balance risk and benefit.

Î Resources for identifying, eliminating, and/or controlling risks are very limited.

Ï All serious risks should be addressed (limited or controlled by management).

EMERGENCY ACTION FLOWCHART



HAZARD WORKSHEET

| | | | | |
|---------------|-------------------|--------------------|------------------|-------------|
| CLIFFS | AIR TEMPERATURE | DEPTH OF WATERS | SUBMERGE OBJECTS | UNDER TOW |
| CURRENTS | WATER TEMPERATURE | POWER BOATS | FISH NETS | BACKWASH |
| TIDES | FOG | SAIL BOATS | BARNACLES | IMPACT ZONE |
| WINDS | SMOG | WIND SURFBOARD | SLIPPERY SURFACE | SILT |
| SURF | WATER VISIBILITY | SURFBOARD | SUN | MUD |
| SURGE | KELP/SEA GRASS | BODY BOARD | NIGHT | LAVA TUBES |
| SHORE BREAK | SEA URCHIN | KAYAK | MANGROVE | KNIVES |
| SAND/SAND BAR | EELS | CANOE | FLOATING OBJECTS | SPEARS |
| ROCKS | RAIN | JETTYS | POLLUTANTS | FIRE ARMS |
| REEFS/CORAL | LIGHTING | OFFSHORE STRUCTURE | SALT SPRAY | EXPLOSIVES |
| CAVES | SHARKS | PIERS | HELICOPTERS | CHEMICALS |
| WATERFALLS | MAN-OF-WAR | STONE FISH | RIVERS | GAS |
| LOOSE DIRT | JELLYFISH | FISHING LINE | RUN-OFF | OIL |

OCEAN SURVIVAL WORKSHEET

| NAME: | RATING | | | | | COMMENTS |
|---------------------------|----------|----------|----------|----------|-----------|----------|
| | BAD | WEAK | AVERAGE | GOOD | EXCELLENT | |
| | (1) | (2) | (3) | (4) | (5) | |
| SURVIVAL FLOATING | 1 | 2 | 3 | 4 | 5 | |
| SWIMMING | 1 | 2 | 3 | 4 | 5 | |
| RESCUE TUBE/FINS | 1 | 2 | 3 | 4 | 5 | |
| BREATH HOLDING | 1 | 2 | 3 | 4 | 5 | |
| RESCUE PADDLEBOARD | 1 | 2 | 3 | 4 | 5 | |
| SURF SKILLS | 1 | 2 | 3 | 4 | 5 | |
| ENTRY & EXIT | 1 | 2 | 3 | 4 | 5 | |
| H2O SELF DEFENSE | 1 | 2 | 3 | 4 | 5 | |
| COMMUNICATIONS | 1 | 2 | 3 | 4 | 5 | |
| STRENGTH | 1 | 2 | 3 | 4 | 5 | |
| SPEED | 1 | 2 | 3 | 4 | 5 | |
| AGILITY | 1 | 2 | 3 | 4 | 5 | |
| FLEXIBILITY | 1 | 2 | 3 | 4 | 5 | |
| ENDURANCE | 1 | 2 | 3 | 4 | 5 | |

(Foundation of an Organization)

- **System** = Communication (simple to complex)
- **Strategy** = In-depth planning and preparation
- **Structure** = A solid foundation supporting the overall life span of the mission. (Flow chart of incident command or organization.)

THE RANGE OF RISK

Depends on (K.A.T.) or the lack of it
Knowledge

Educated, Experience, Knowledgeable, Professional with an unlimited
Resource of information will greatly decrease the risk factor.

Ability

To be (S.S.A.F.E.) it takes a (A.C.E.) decision to avoid, control or eliminate the hazard.

Strength = to hold back the Hazard.

Speed = to out run the Hazard.

Agility = to avoid the Hazard.

Flexibility = to bend to the Hazard.

Endurance = to out last the Hazard

Technology

It can increase, enhance, extend, augment, and multiply your knowledge and ability.
Without proper knowledge or ability, technology can have an extreme negative effect.