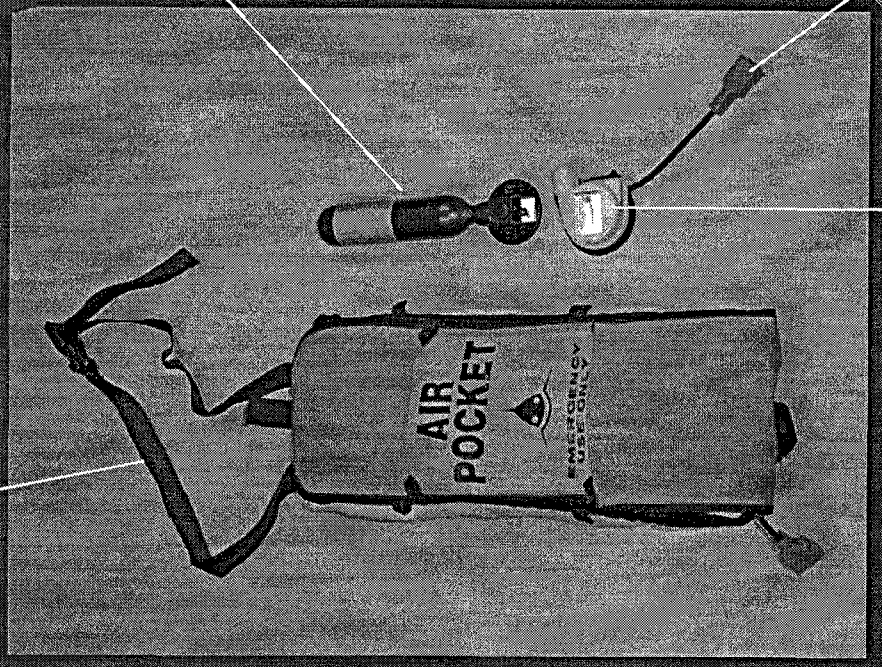
Types of Systems

Hybrid Rebreather



3.5 Litres
Compressed Air

Emergency
Manual Inflator

Salt Water
Activated
Automatic
Inflator

Securing Strap

Systems Specifications

COMPRESSED AIR

- Working pressure 1800 lbs psi - 3400 lbs
- Volume 42 litres - 80 litres
- System weight - approximately 3 lbs.
- Regulator - first stage
- Demand valve - second stage
- Duration of air supply approximately 21 breaths at 21 feet*

*based on an average breath volume of 1.5 litres at a breath rate 10.5 bmp with a starting pressure of 3000 psi.

REBREATHER/HYBRID

- Atmospheric pressure
- Volume = Lung volume + 3.5 litres
- System weight - 2.25 lbs.
- Regulator - not required
- Demand valve - not required
- Duration - ?

Compressed Air

POSITIVE

- Instant supply of air underwater. Requires no prior activation
- Duration 2 - 6 minutes
- Several types available
- Purge capability
- Proven in real accidents

NEGATIVE

- Pulmonary over inflation injury
- Integration difficulties with survival equipment
- Runs out without warning

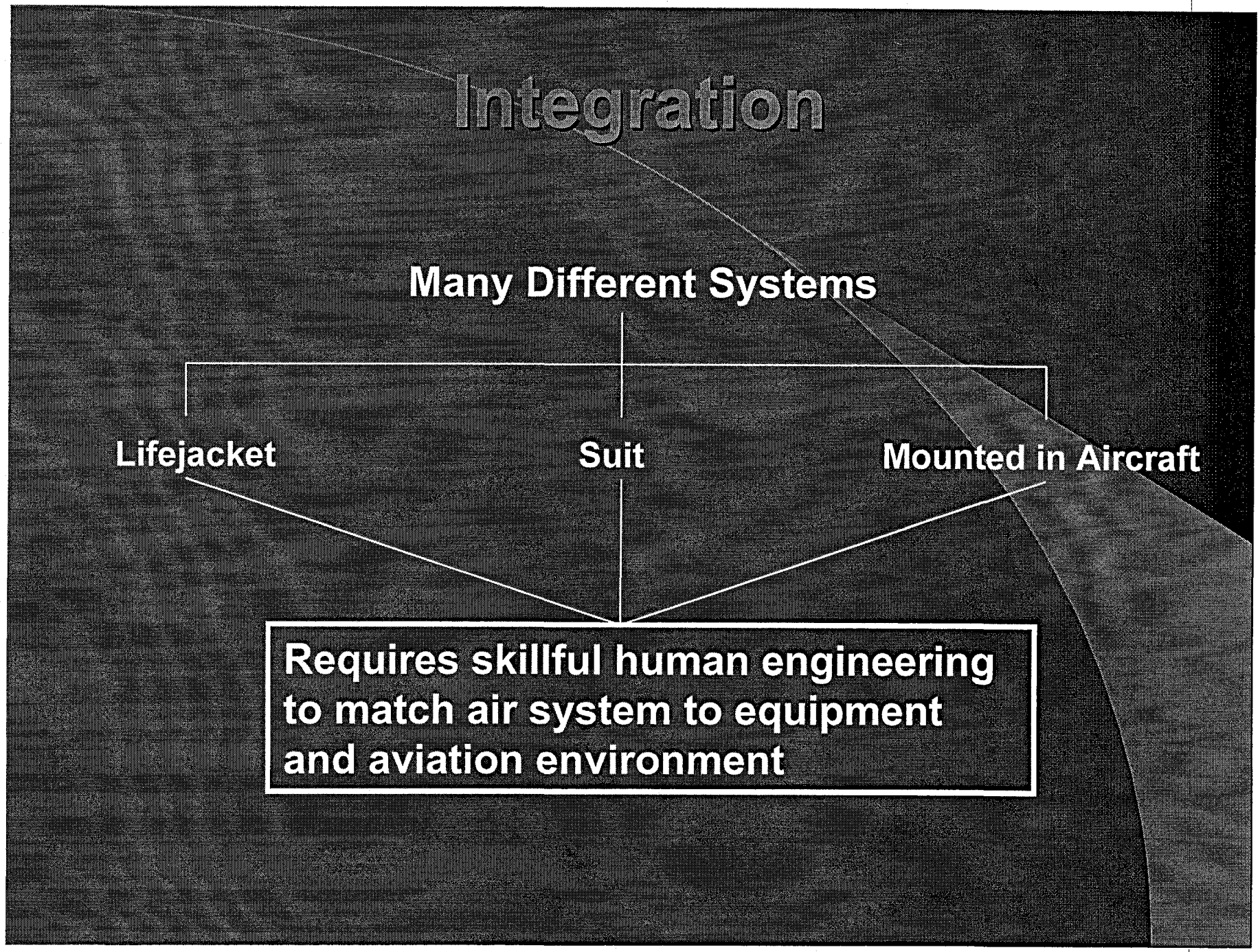
Rebreather (Hybrid)

POSITIVE

- Simple design

NEGATIVE

- Complex procedures to follow to make operational during critical part of flight (I.e. ditching)
- Must activate the system before immersion.
- No purge capability (cannot be operated under water)
- Breathing resistance changes with orientation and depth. May be difficult or impossible to breathe at depth.
- Requires a full breath of air prior to going underwater (rebreather only)
- Danger of Hypoxia
- Hybrid ⟶ Pulmonary Over inflation injury
- Integration difficulties with survival equipment
- To date, it has never been used in an actual helicopter ditching incident


Integration
Many Different Systems
Lifejacket
Suit
Mounted in Aircraft
Requires skillful human engineering to match air system to equipment and aviation environment

Flight Commander Leg Mounted Compressed Air System