



HELICOPTER UNDERWATER ESCAPE TRAINING (HUET) IN AVIATION MEDICINE



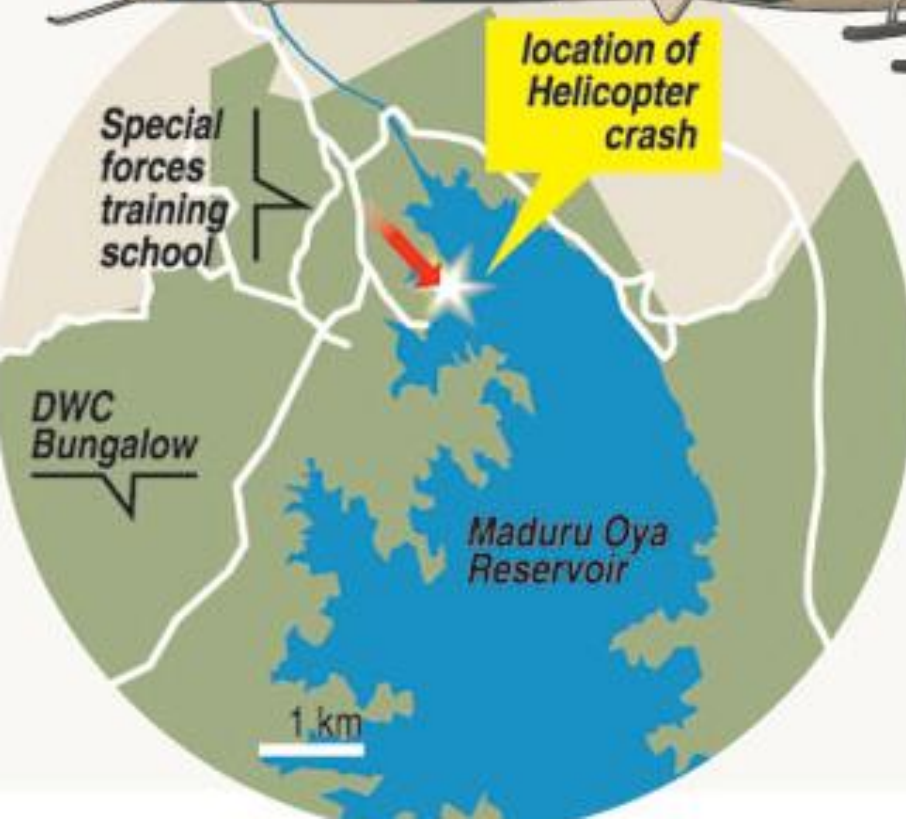
Bell 212 helicopter

Type: Medium utility helicopter

Manufacture Year: 1985

Bought to Sri Lanka: 1985

Passengers (Capacity): Up to 14



Air Force: 06
(with two pilots) **06 Killed**



Special Forces: 06





adaderana



HELICOPTER UNDERWATER ESCAPE TRAINING (HUET) IN AVIATION MEDICINE

“A Historical Perspective and Its Role in Aircraft Survivability”

Wg Cdr AN Himali Mendis

MBBS, MSc DRRD, PGD in HSDM, Dip in AVM



INTRODUCTION

- Helicopter operations frequently involve over-water flights.
- Water impact accidents carry high risk of drowning.
- HUET is a critical component of aviation and military medicine.
- Focus: history, principles, and survivability impact.



EARLY HELICOPTER ACCIDENTS



CAUSE OF DEATH IN AIRCRAFT ACCIDENTS



Up to **25-30%**

OF FATALITIES IN HELICOPTER WATER CRASHES
ARE DUE TO

DROWNING

Drowning

25-30%

70-75%

Other Causes

Survive the Crash, But Escape is Critical

ORIGIN OF HUET



1960s: Offshore Oil & Gas

Military & Civil Aviation

Aircrew Training



EVOLUTION OF HUET





- Inclusion of night, low visibility, and wave effects
- Integration with Helicopter Emergency Breathing Systems (HEBS)
- Emphasis on realism and stress inoculation

HUET FROM AN AVIATION MEDICINE PERSPECTIVE



- Addresses human factors and survival physiology
- Stress, hypoxia, and breath-hold limitations
- Spatial disorientation under water
- Medical screening and safety oversight essential





PHYSIOLOGICAL CHALLENGES IN DITCHING

- Cold shock response
- Breath-hold capacity reduction under stress
- Increased oxygen consumption
- Risk of aspiration and panic-induced errors



CORE COMPONENTS OF HUET



- Brace position and impact survival
- Reference point technique



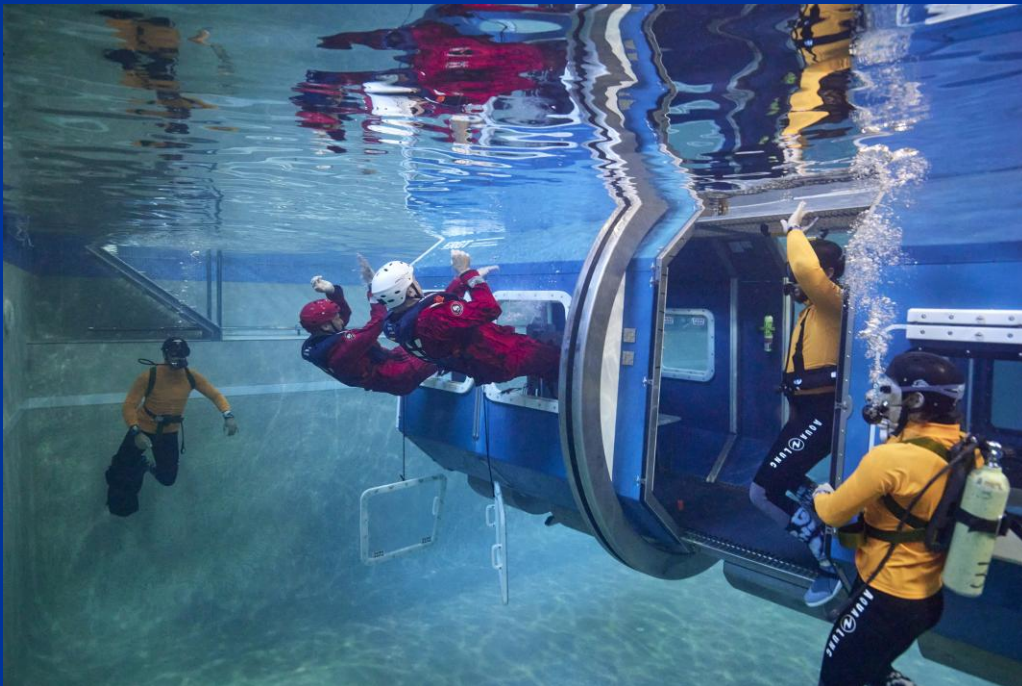
Exit point /
Reference



Buckle.

CORE COMPONENTS OF HUET

- Controlled escape after inversion
- Life jacket and raft deployment procedures



HUET AND HUMAN FACTORS



- Muscle memory development
- Decision-making under stress
- Crew coordination and communication
- Error reduction during emergency escape



EVIDENCE SUPPORTING HUET EFFECTIVENESS

Safety Research Journal

Controlled HUET Trials



Controlled HUET Trials

Egress success rate exceeding
99% in simulated trials
(Science Direct, 2013)

References

1. Control Airfielding, 2011 - National Aeronautics and Space Administration, Helicopter egress effectiveness investigation
2. The effectiveness of helicopter egress training - Science Direct, 2013
3. Helicopter egress effectiveness investigation, 2011

Naval Aviation Study

US Navy Data



US Navy Data

91.5% survival rate for
HUET-trained personnel,
only **66%** for untrained
crews
(X-Ray Mag, 2018)

Reference

1. Helicopter egress effectiveness investigation, 2011
2. Helicopter egress effectiveness investigation, 2011

Emergency Response Review

Real-World Incident: Super Puma Crash



Real-World Incident: Super Puma Crash

Report **77.8%** overall
survival among trained
occupants
(SurakshaWeb, 2018)

References

1. Helicopter egress effectiveness investigation, 2011
2. Helicopter egress effectiveness investigation, 2011



CONCLUSION

- HUET is a cornerstone of aircrew survivability
- Strong historical foundation with evolving practice
- Essential collaboration between trainers and aviation medicine
- Continued refinement will further save lives



THANK YOU