





REASONING WITH LIFE AND DEATH AT THE BOTTOM OF THE NORTH SEA



September 18th 2012

The Huntingdon Subsea Manifold

90 Miles East of Aberdeen

22:47



## INTRODUCTION

## INTRODUCTION

- What is saturation diving and why do we need it?
- Life in saturation
- The Topaz incident
- Lessons learnt Adherence to process and dynamic risk assessment
- Q & A

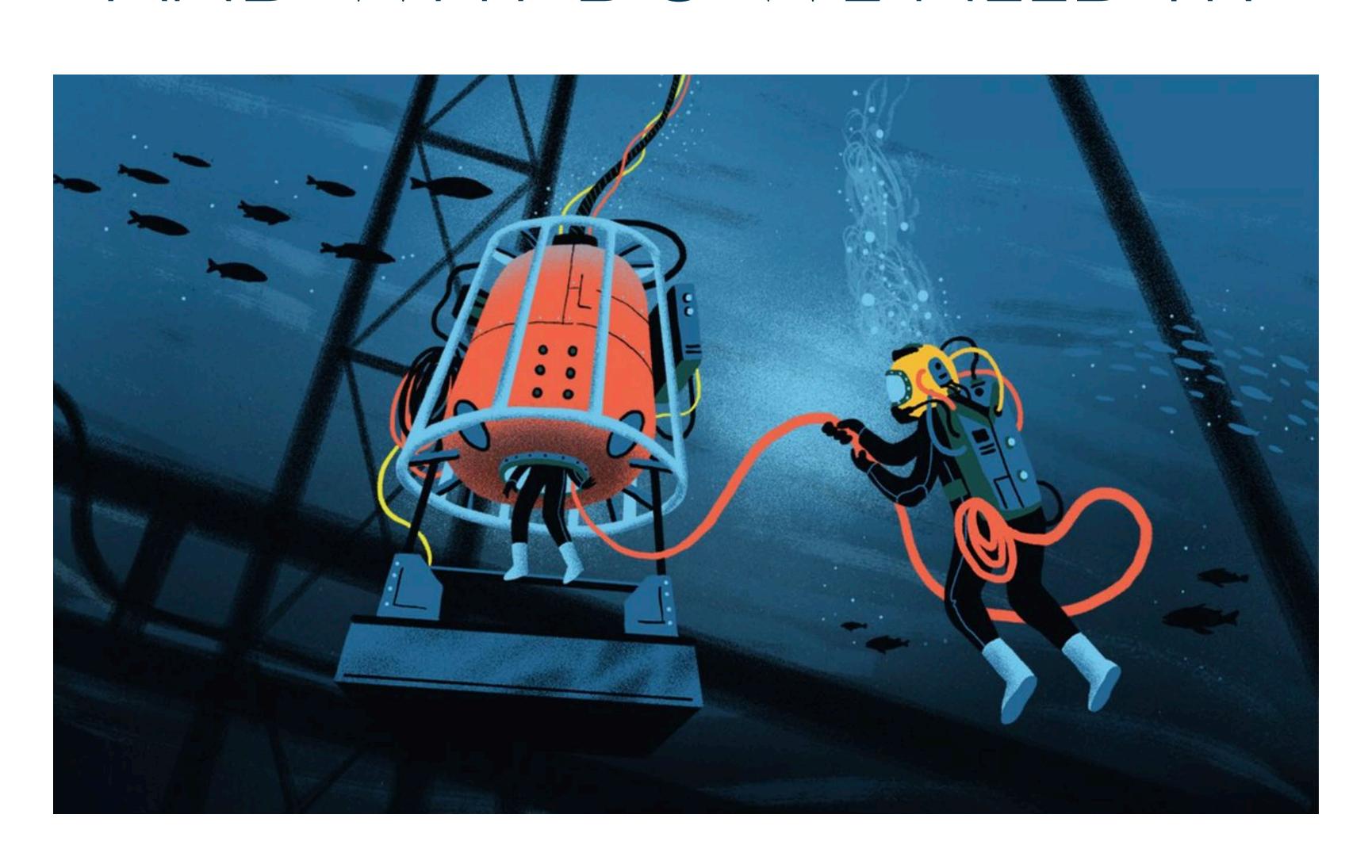
## COMMERCIAL DIVING

## COMMERCIAL DIVING



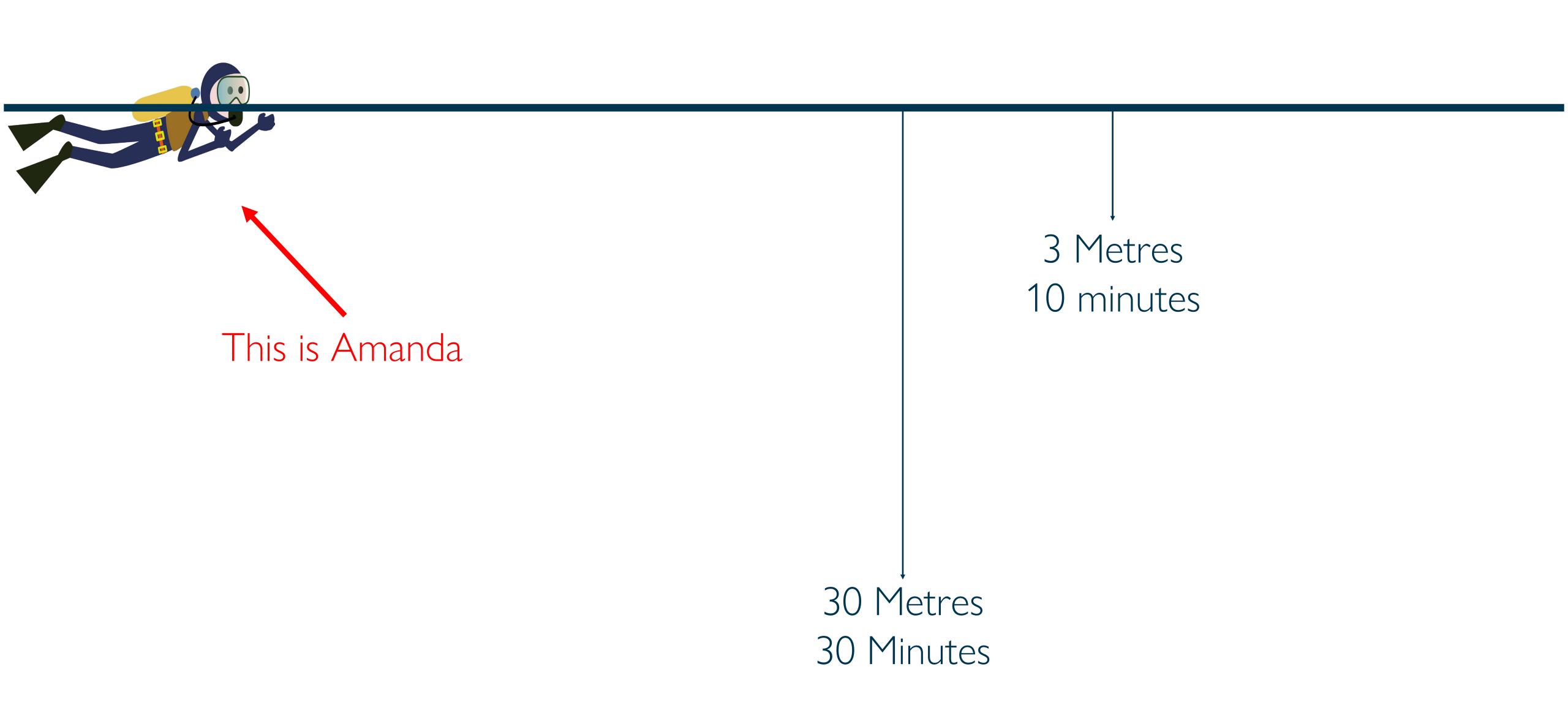
# WHAT IS SATURATION DIVING AND WHY DO WE NEED IT?

# WHAT IS SATURATION DIVING AND WHY DO WE NEED IT?



## BACK TO BASICS - AIR DIVING

#### BACK TO BASICS - AIR DIVING

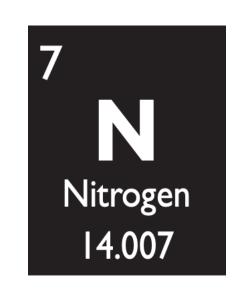


## WHAT IF WE WANT TO DIVE DEEPER?

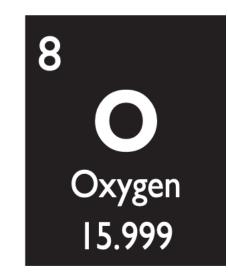
## THE 3 PROBLEMS

## THE 3 PROBLEMS

1. Nitrogen Narcosis



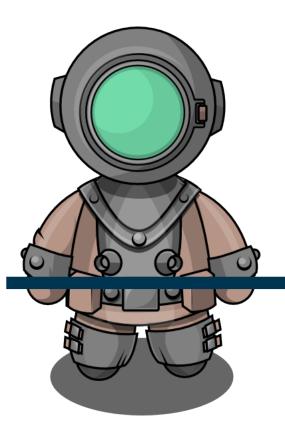
2. Oxygen Toxicity



3. Time



#### WHY TIME IS A PROBLEM WHEN DIVING DEEPER





100 Metres6 Hours

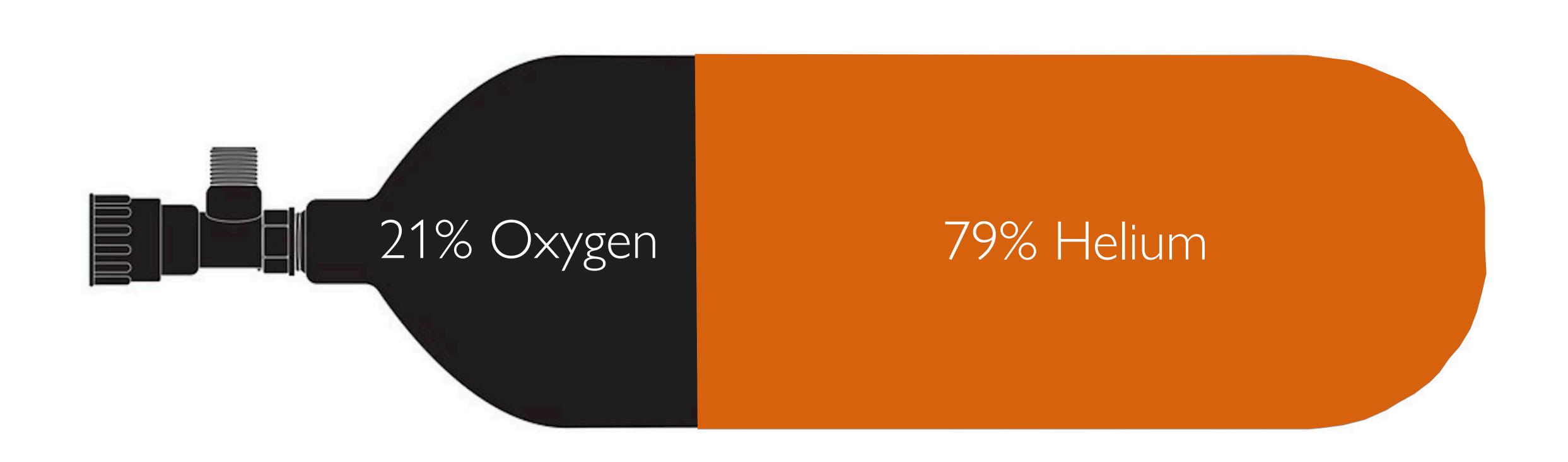
# 4 DAYS

## THE 3 SOLUTIONS

## THE 3 SOLUTIONS

Solution 1 - Nitrogen Narcosis

### BREATHING GAS MAKE UP

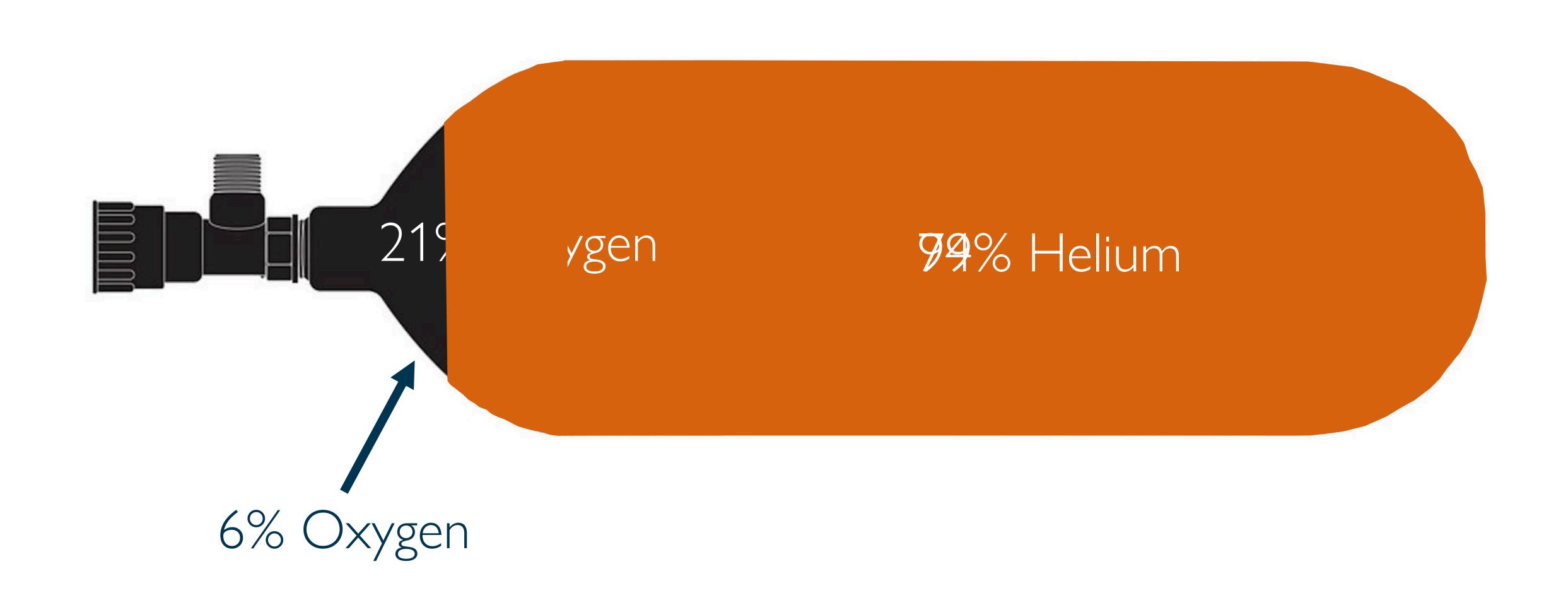


## THE 3 SOLUTIONS

Solution 1 - Nitrogen Narcosis

Solution 2 — Oxygen Toxicity

### BREATHING GAS MAKE UP



## THE 3 SOLUTIONS

Solution 1 - Nitrogen Narcosis

Solution 2 — Oxygen Toxicity

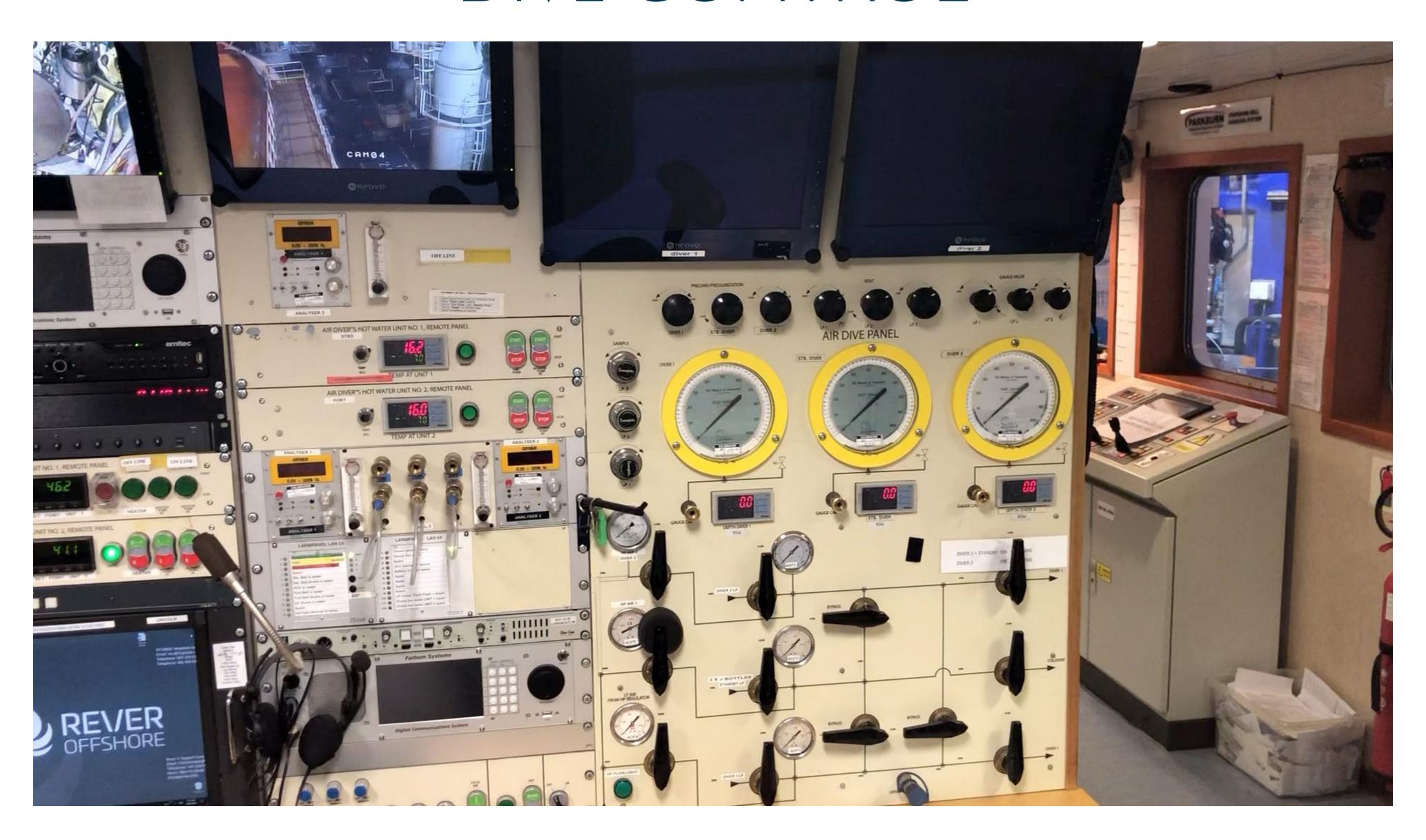
Solution 3 — Time







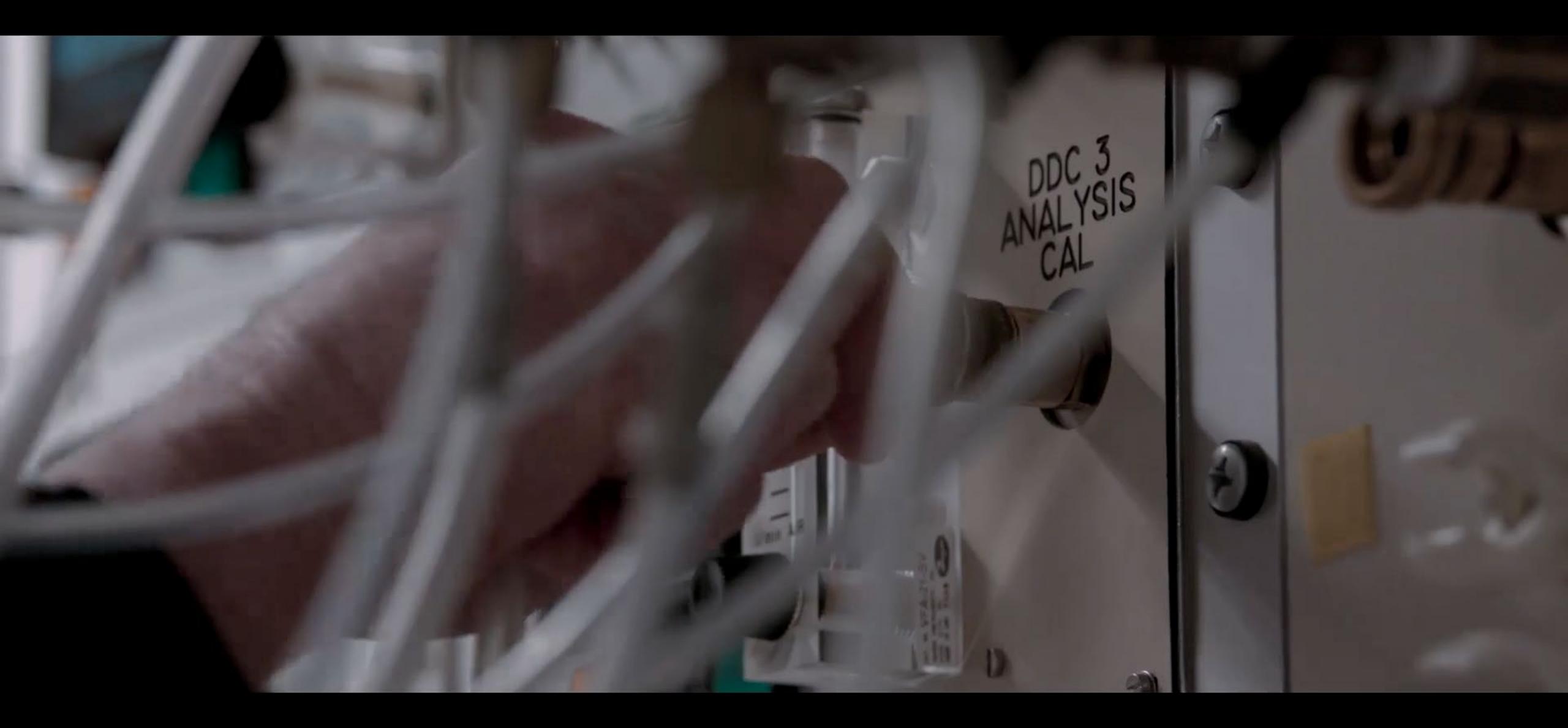
## DIVE CONTROL





## LIFE IN SATURATION





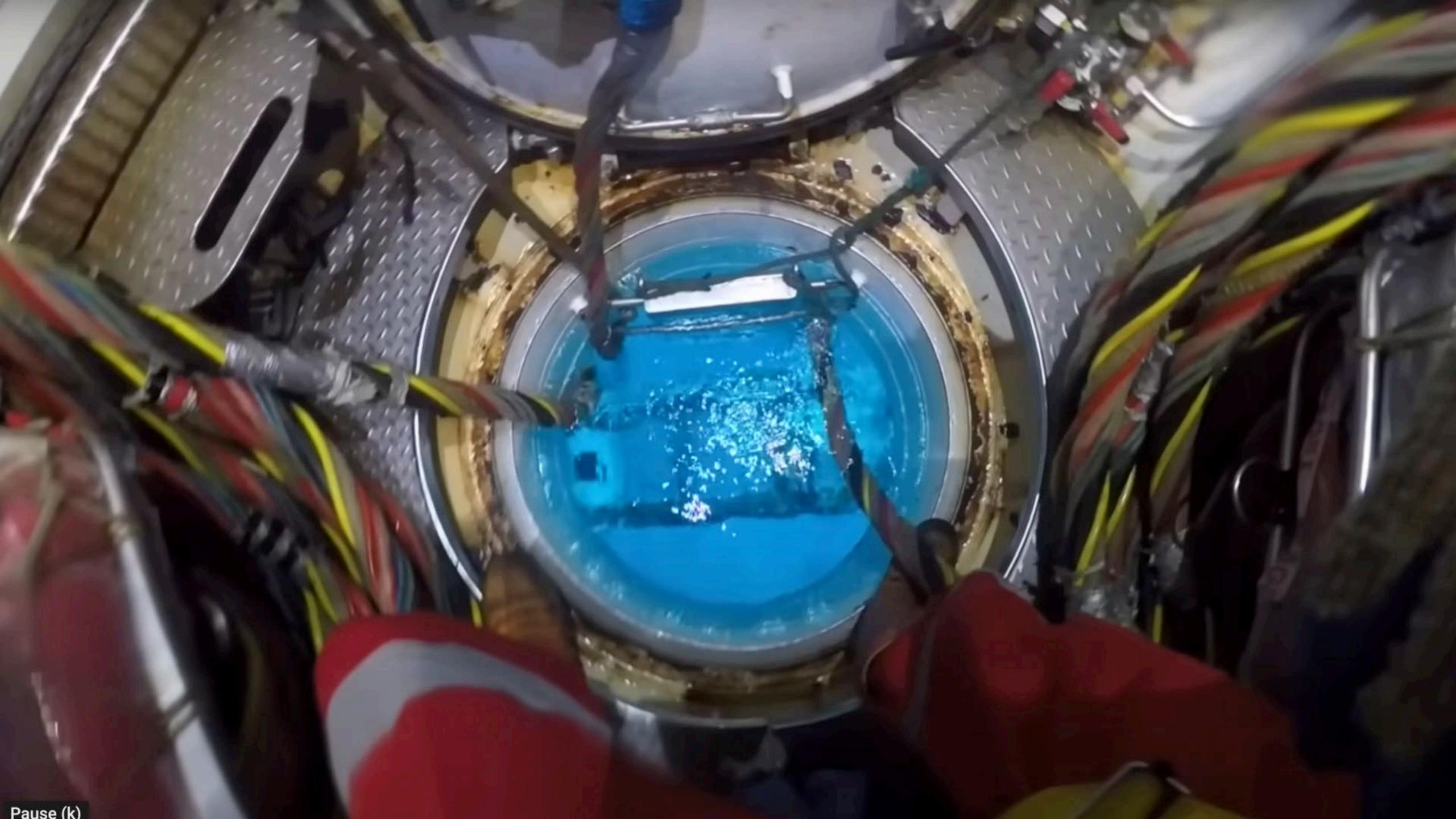
#### OFFSHORE DIVING WORK

### OFFSHORE DIVING WORK



### SUBSEA INFRASTRUCTURE



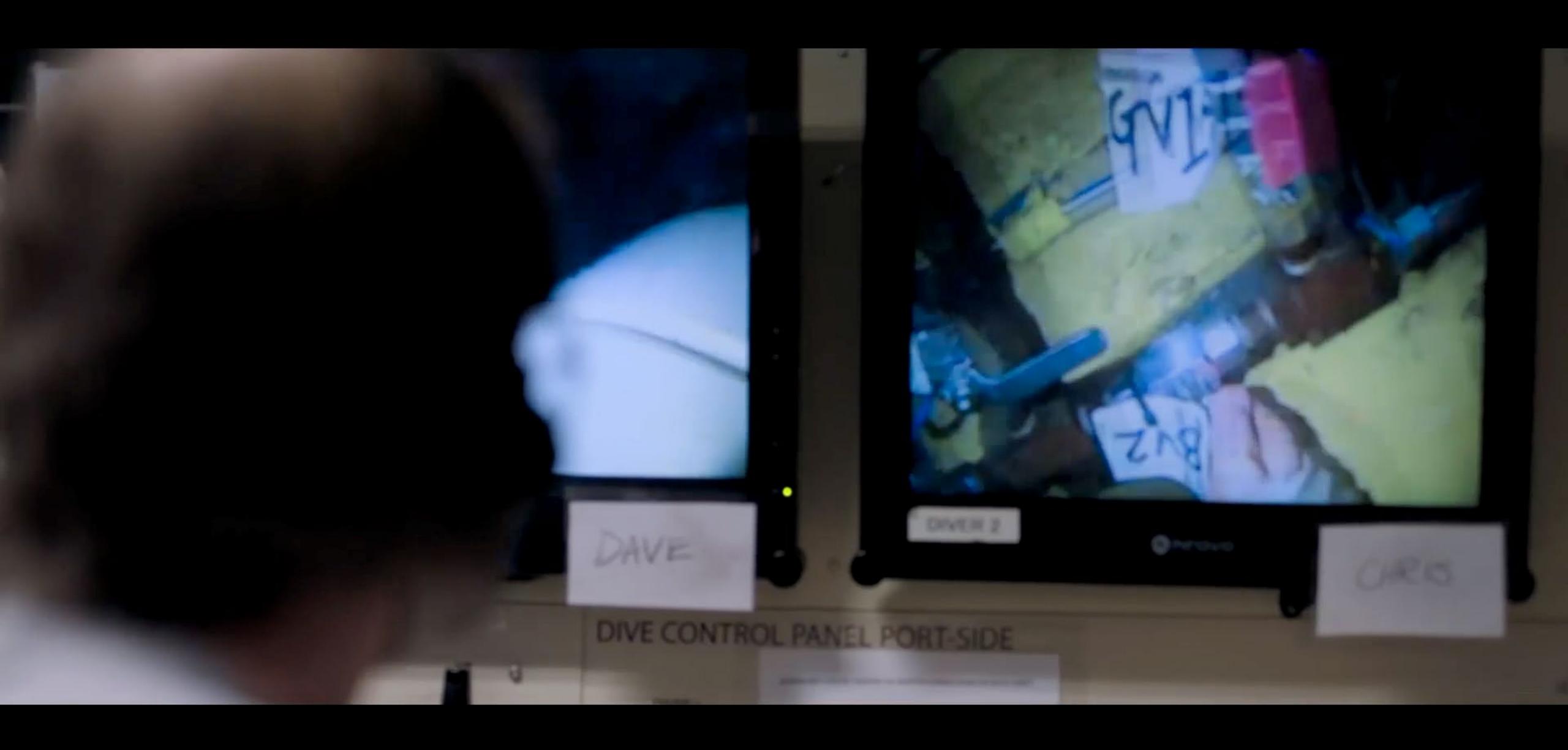


### THE TOPAZ INCIDENT

### THE TOPAZ INCIDENT

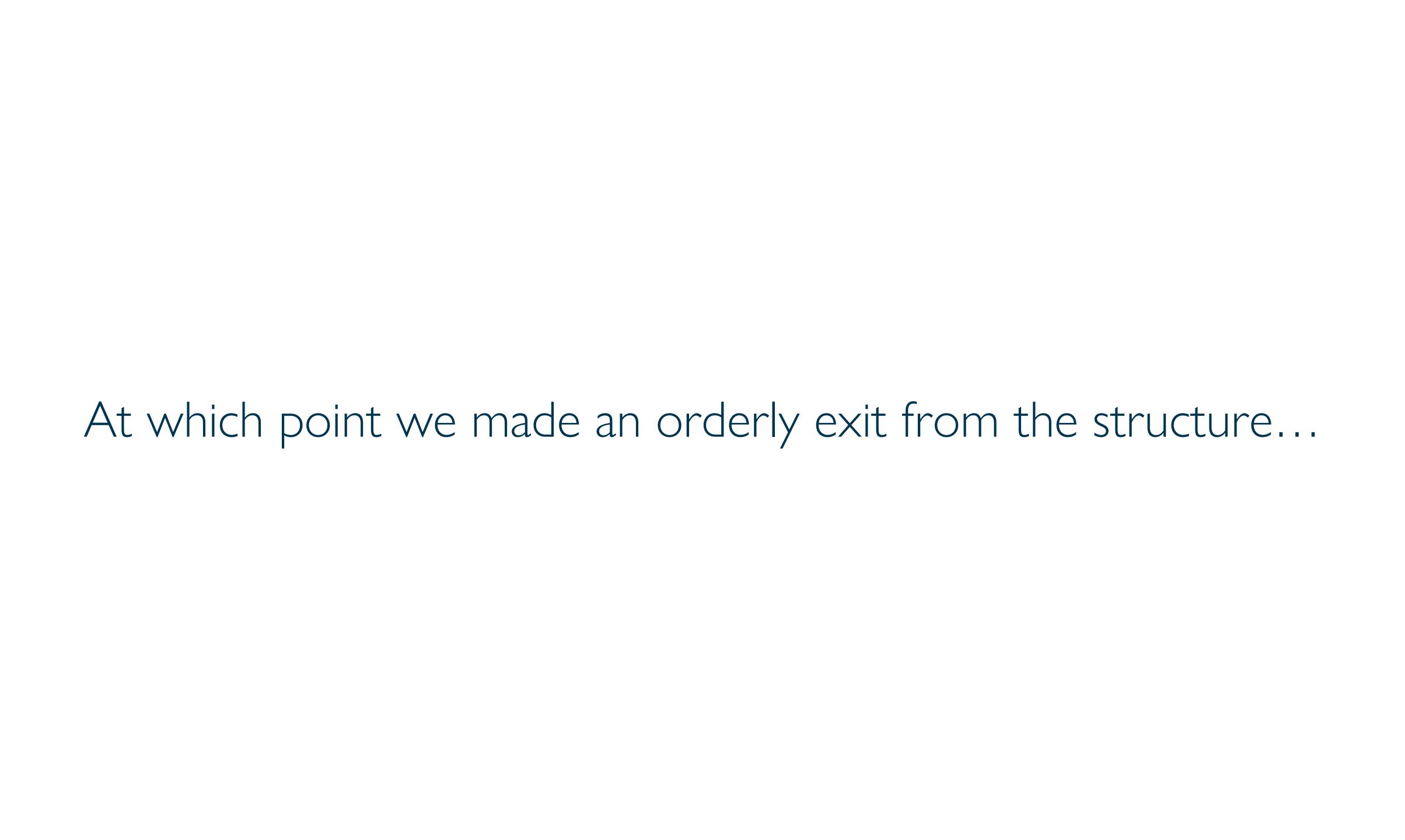


A normal day at the office...



Until we heard the alarms...







The bell is not where we had left it...





In the bell, Duncan is feeling the strain...



# 



And then the inevitable happens...

D 78.5 A 6.2



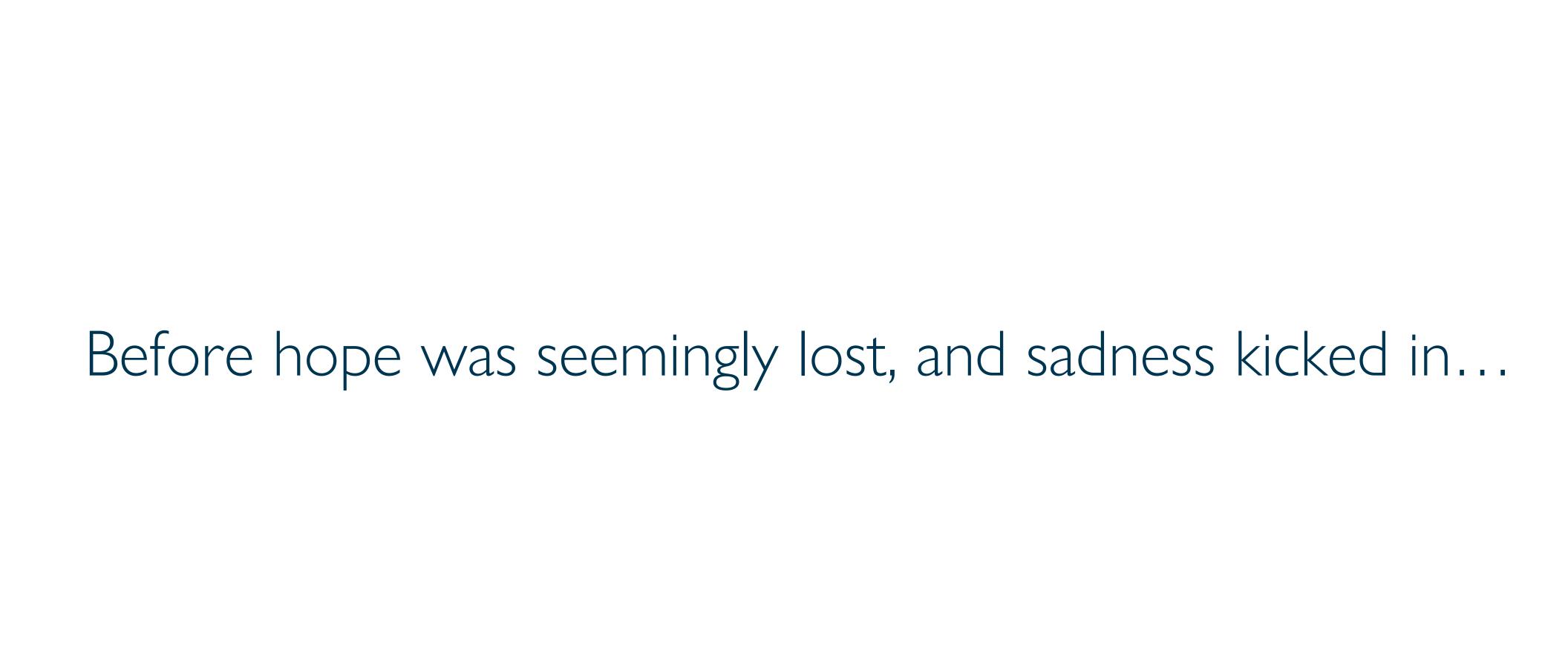


Duncan still has to pull in the umbilical...



On the bottom, things were quickly getting desperate...





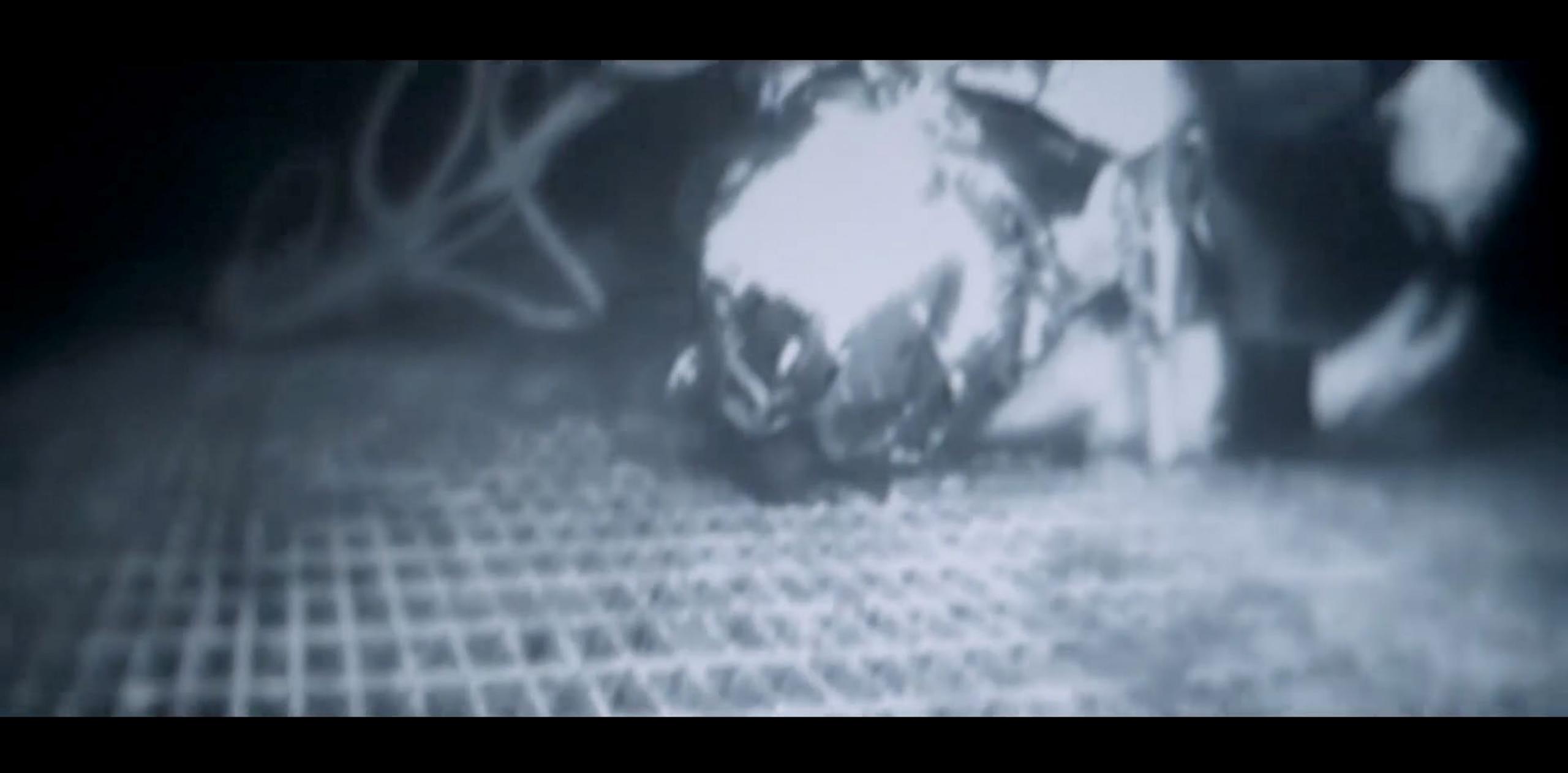


### 9 Minutes

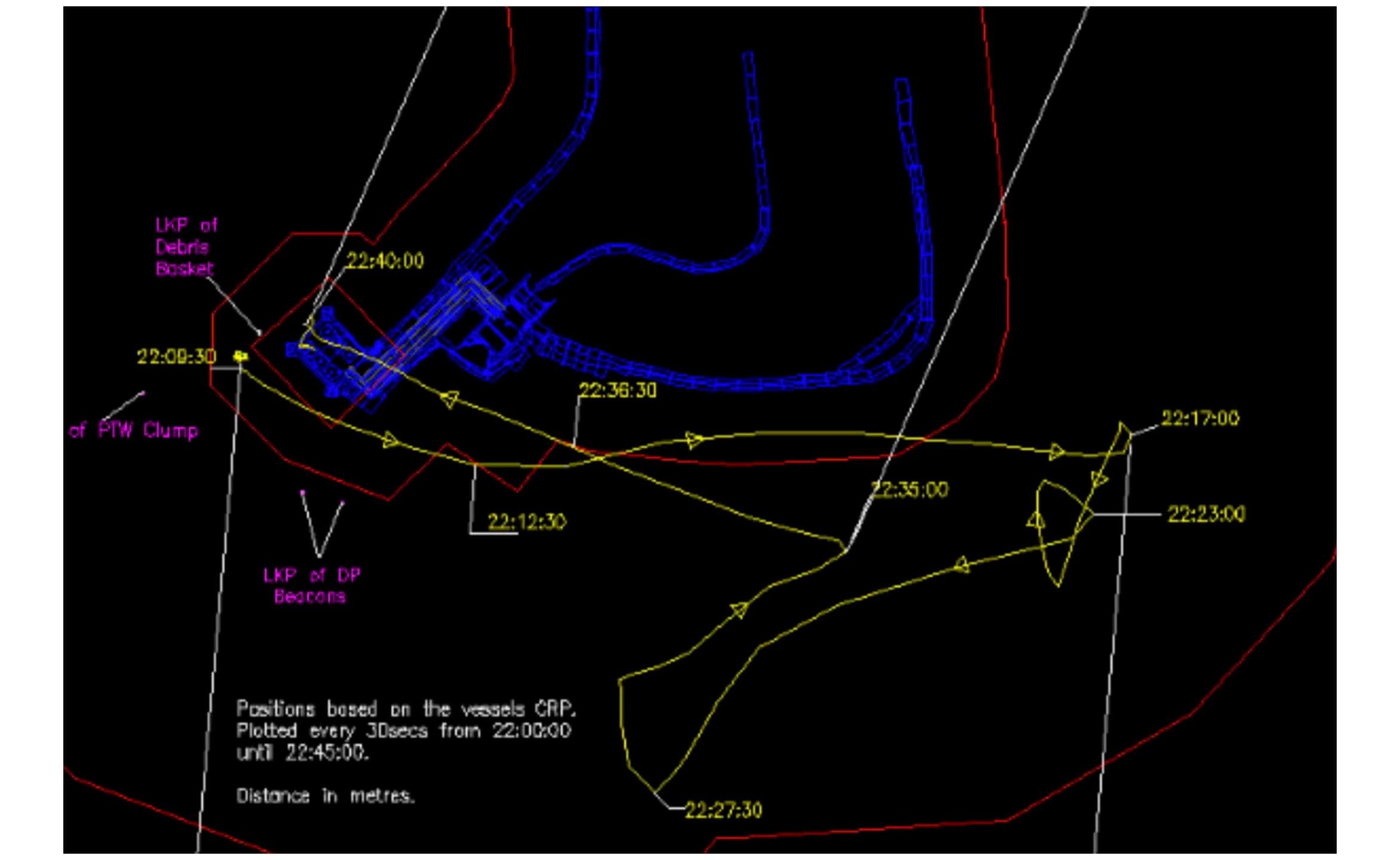


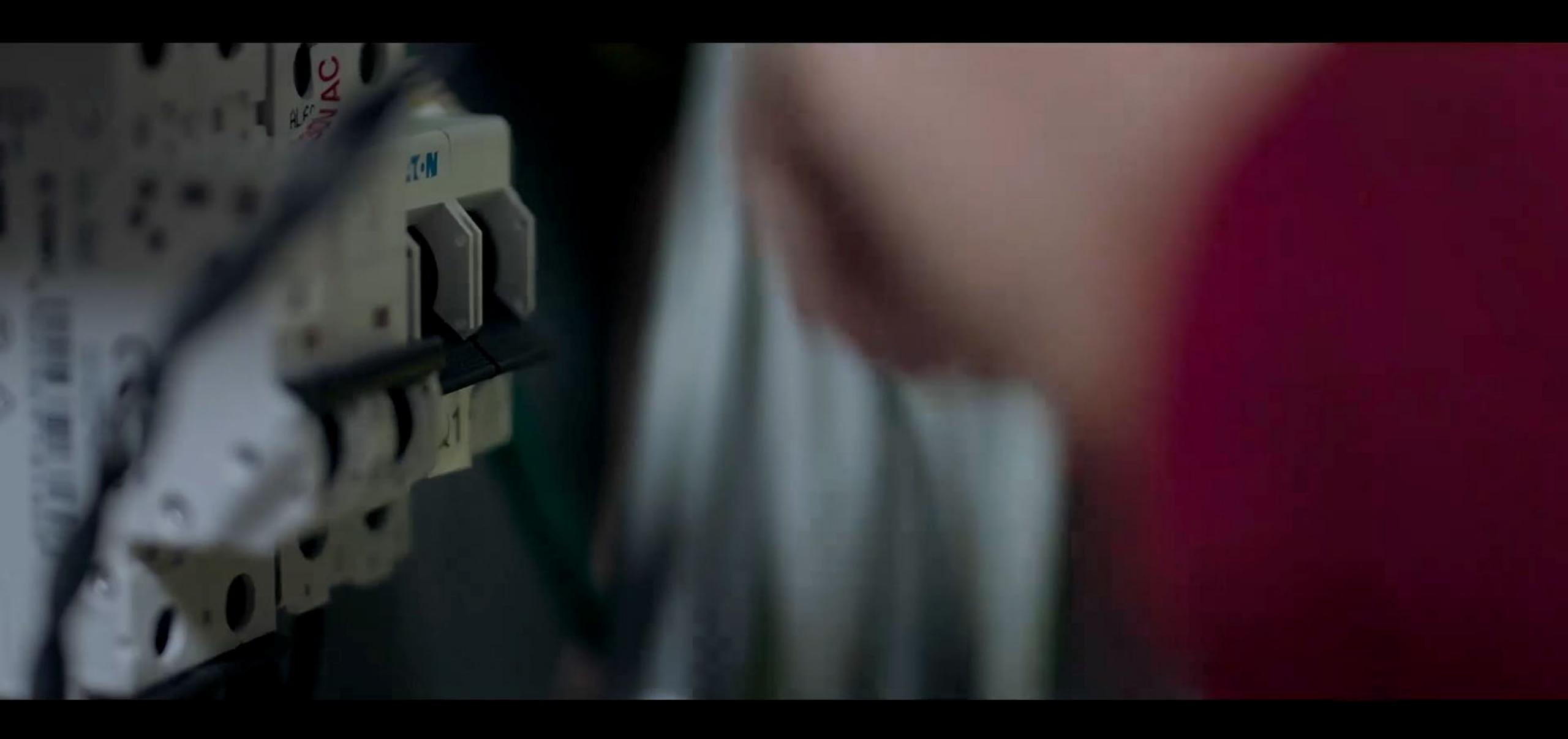
### REMOTELY OPERATED VEHICLE





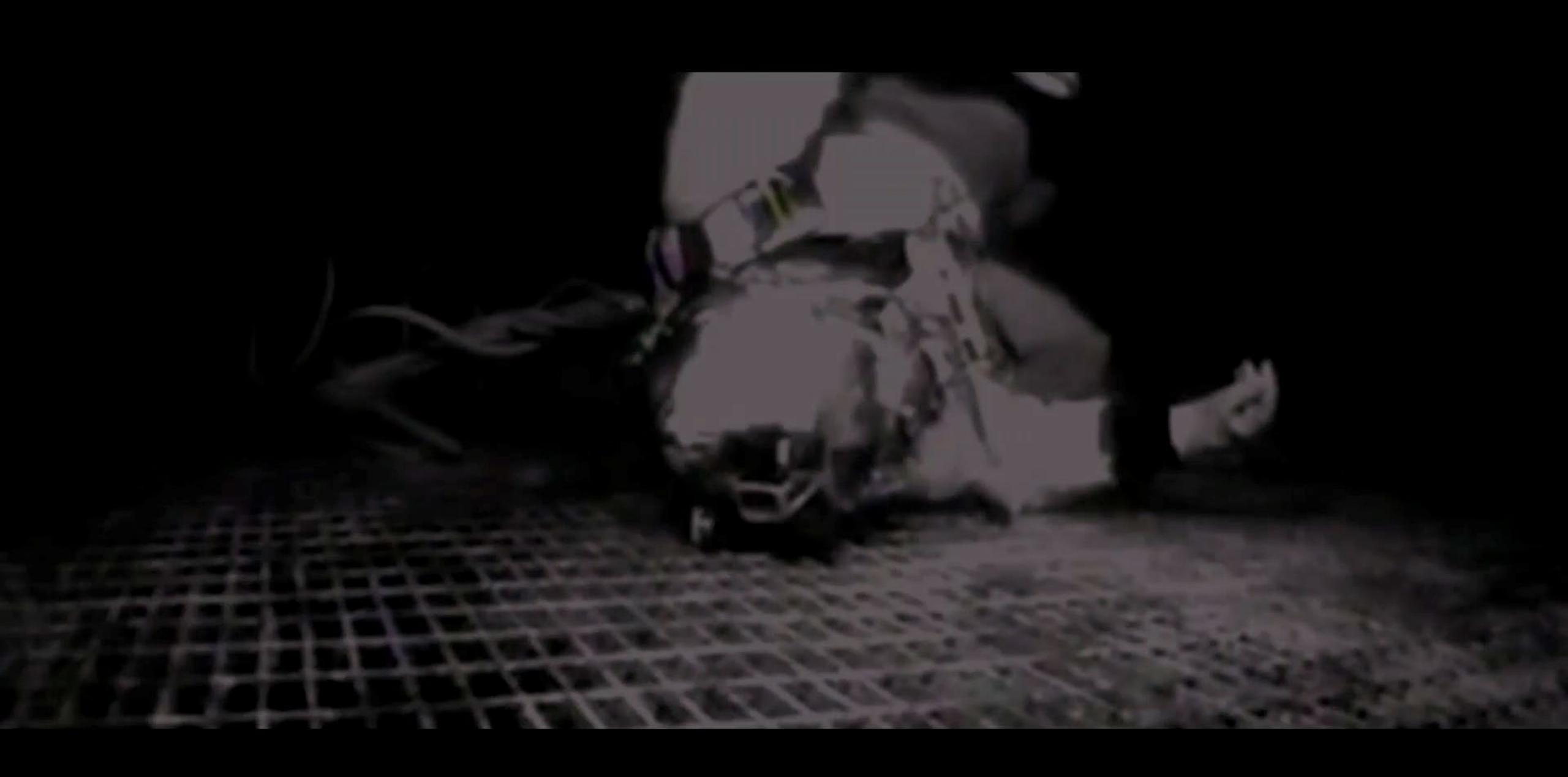
On the bridge, they continue to search for a solution...





## 35 Minutes (i)





## 41 Minutes (i)





My survival seems confusing to some...



### RECOVERY



Stripped and wrapped in blankets on return to system

Attempted (failed) insertion of IV line...

Some vomiting, bruising and sleepiness

Despite the many thousands of pounds of medical equipment...



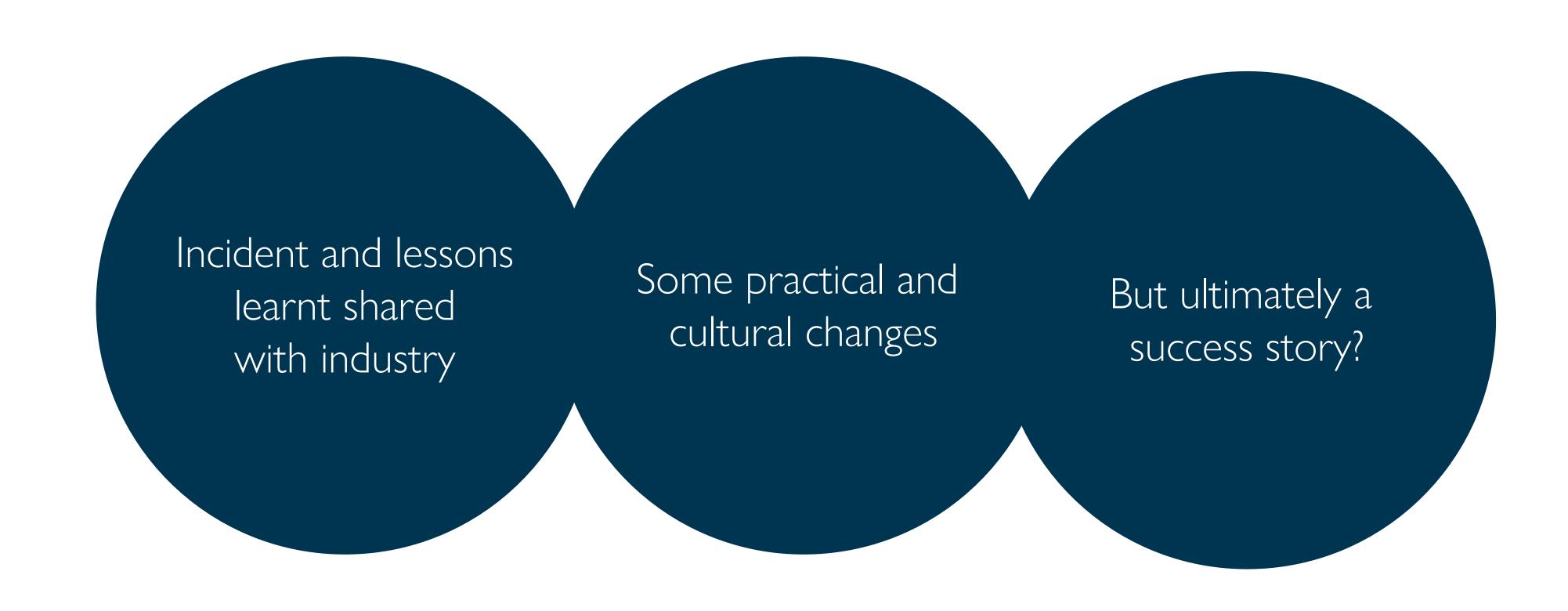
#### EXPLANATION OF SURVIVAL



Cold water?

- High partial pressure of oxygen and saturated tissues?
- Hypercapnic protection?
- Answers from the audience...

### LESSONS LEARNT





Leadership setting
the tone and making
decisions under pressure

Dynamic risk assessments and hazard identification

Procedures and drills freed minds to make decisions

Collaboration and communication

Adherence to process and procedure

### CULTURAL SHIFT



### AT THE MOVIES...

2019



#### chrislemons.co.uk





Thank you.

#### Linkedin

