



# Jigsaw SAR Helicopter Operations





**Bond**

OFFSHORE HELICOPTERS

# Biography

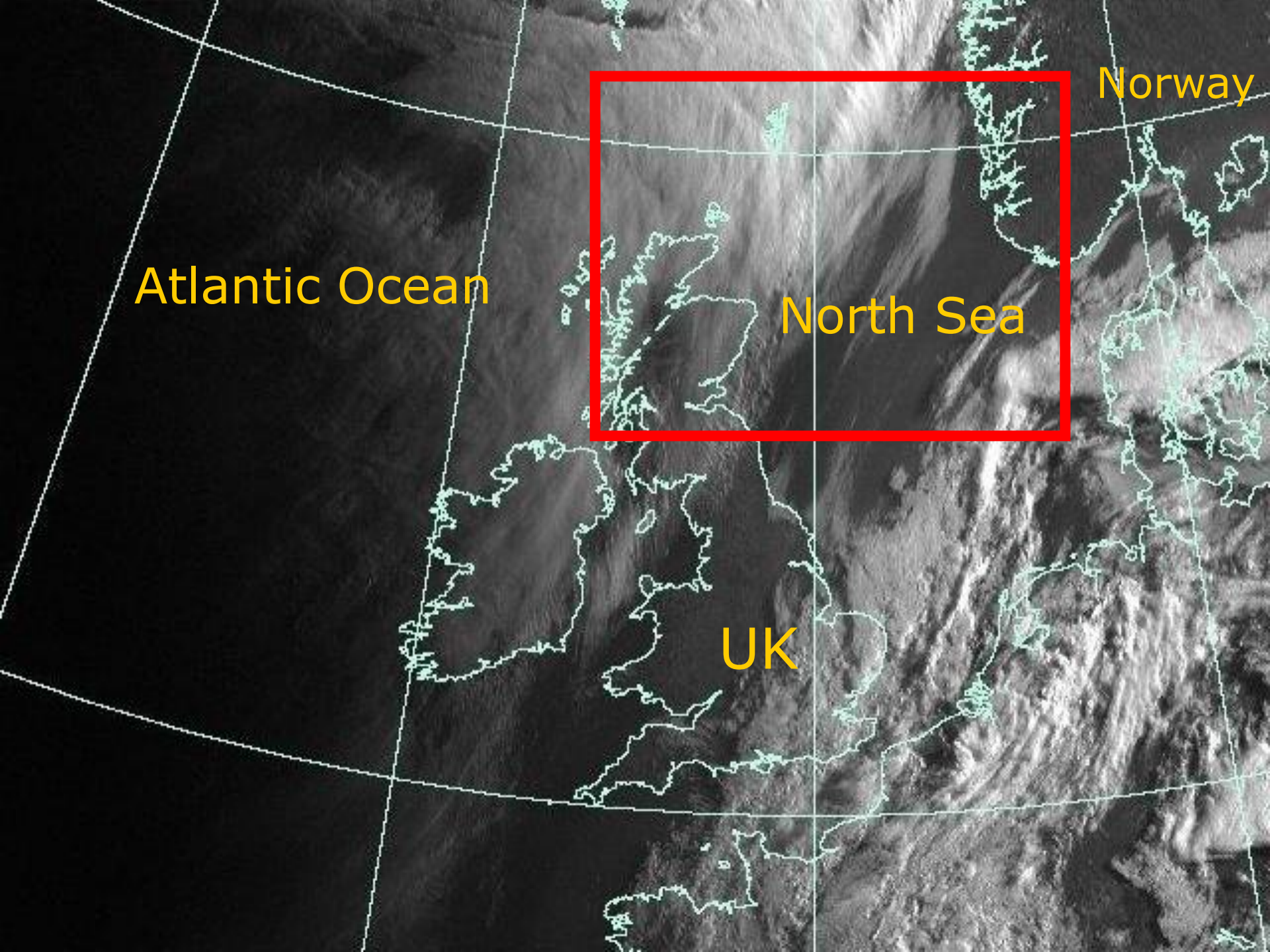
Licences Issues

Crew Members

Winch Man

Winch Operator

Pilots

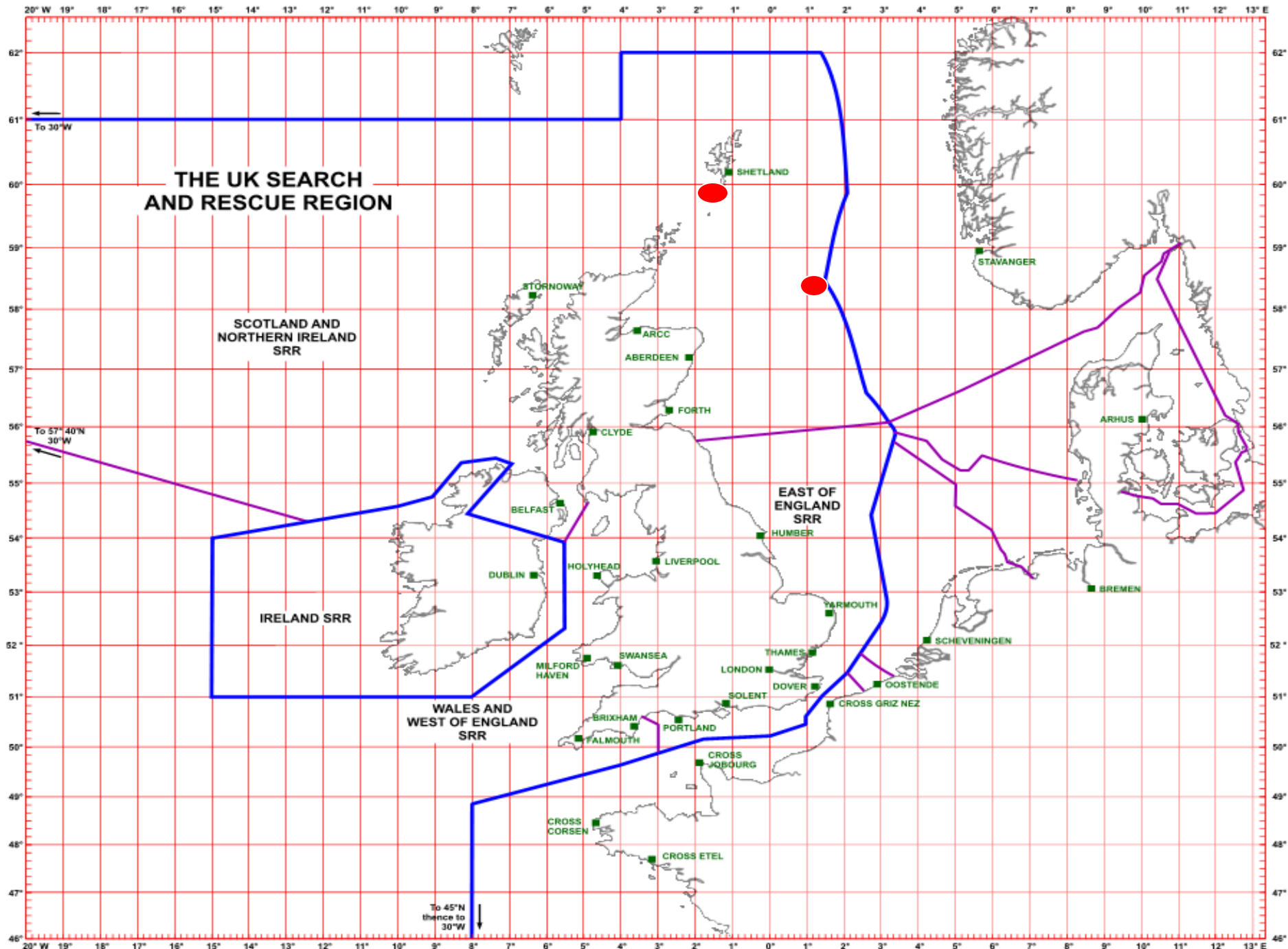


Atlantic Ocean

North Sea

UK

Norway



## Jigsaw Project History

- 2000 Concept Study
- 2003 12 Month Trial – Bristows
- 2003 BOH awarded 10 year+ contract with two SAR Eurocopter AS332L2
- Oct 2005 Aircraft delivered
- Mar 2006 Aircraft 'Go Live'
- May 2007 Vessels 'Go Live'

## Customer Requirements - BP

- To get airborne and rescue 21 survivors from a ditched helicopter and transport them to a place of safety in two hours
- SAR Bases at Sumburgh and Miller
- 24hr / 365 day SAR Cover
- 0700-1900 10 Minute Airborne
- 1900-0700 30 Minute Airborne



## Customer Requirements (Continued)

- Commercial Air Transport (CAT)
  - Inter-Field Shuttling
- Platform Inspections – FLIR
- Oil Pollution Monitoring

## Other Customers

- Scottish Ambulance Service – SAS
  - Inter Island Patient Transfers
  - CAT Rules
- Ships Pilot Transfers – Sullom Voe VTS
  - Commercial Winching - CAP 437

## Pieces of the JIGSAW

**ARRC**

Autonomous Rescue  
and  
Recovery Craft



**RSV**

Regional Support Vessel

**SARH**

Search and Rescue  
Helicopter

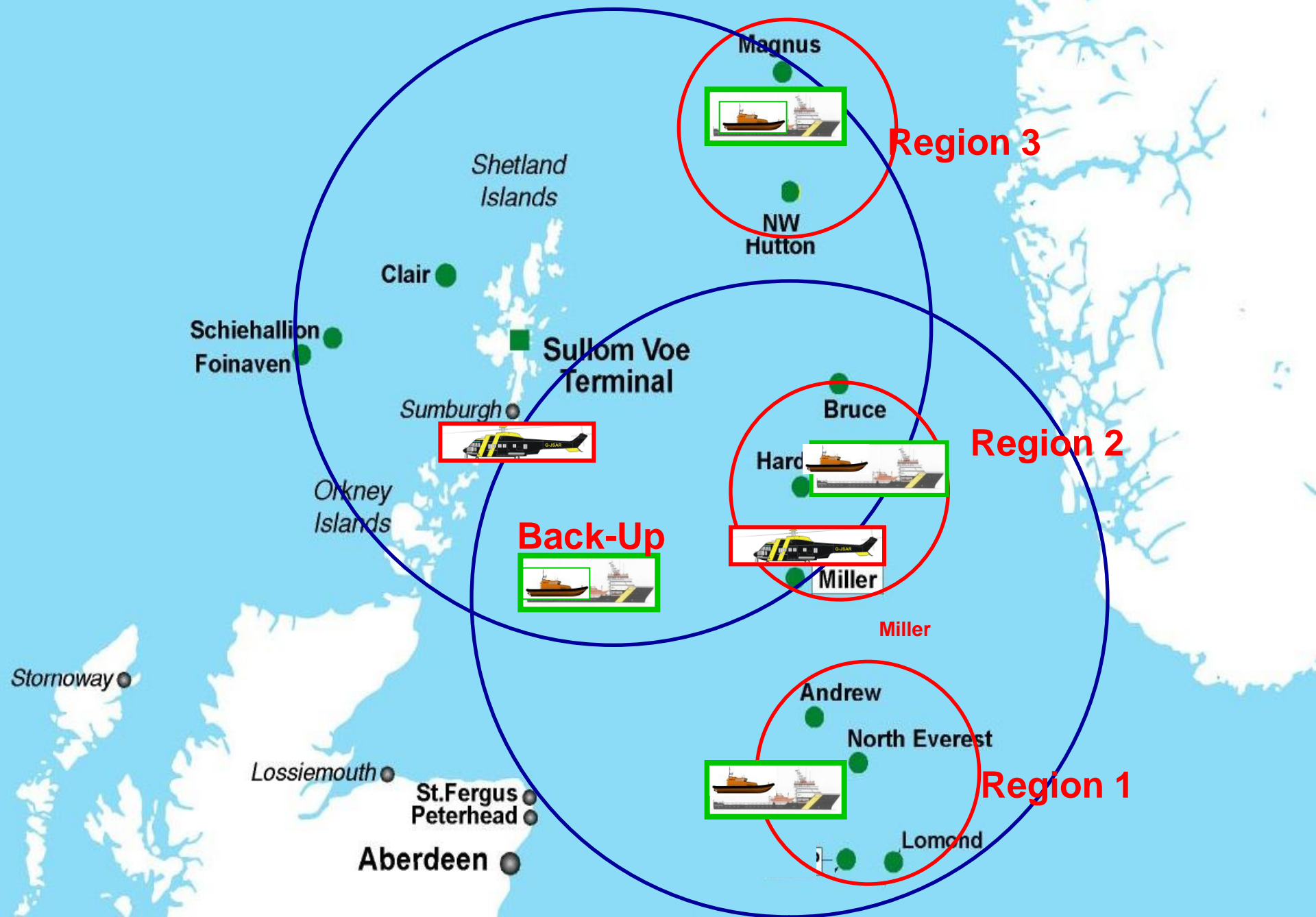


**JIGCO**

Jigsaw  
Coordinator



# JIGSAW COVERAGE



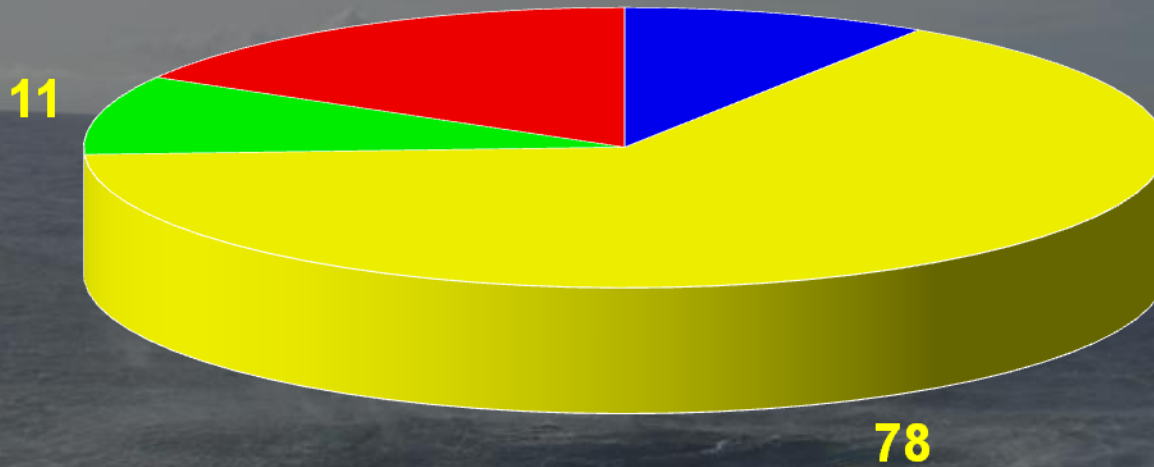
## Likely Tasking - Offshore

- Ditched crew-change helicopter
- Platform abandonment
- Man overboard
- Medical evacuation
- National tasking on behalf of HM Coastguard

## Aircraft Call-out Procedure

- OIM/Ship's Master notify UK Coastguard of incident
- If aircraft required Coastguard contact ARCC RAF Kinloss
- ARCC send nearest aircraft based on locality and weather conditions (wind)
- ARCC request use of Jigsaw SARH through JIGCO

# Mission Types Mar 06 - May 08



■ DOWNMANNING

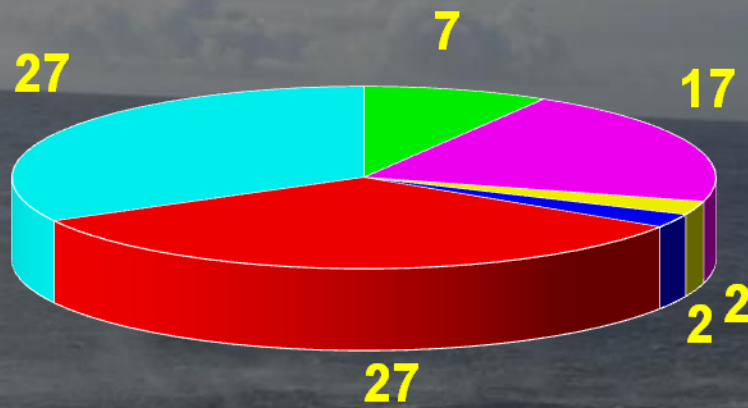
■ MEDRESCUE

■ SAR

■ SAS TRANSFER

Total Missions - 120

# Medical Types



■ ABDO PAIN

■ CARDIAC

■ DROWNING

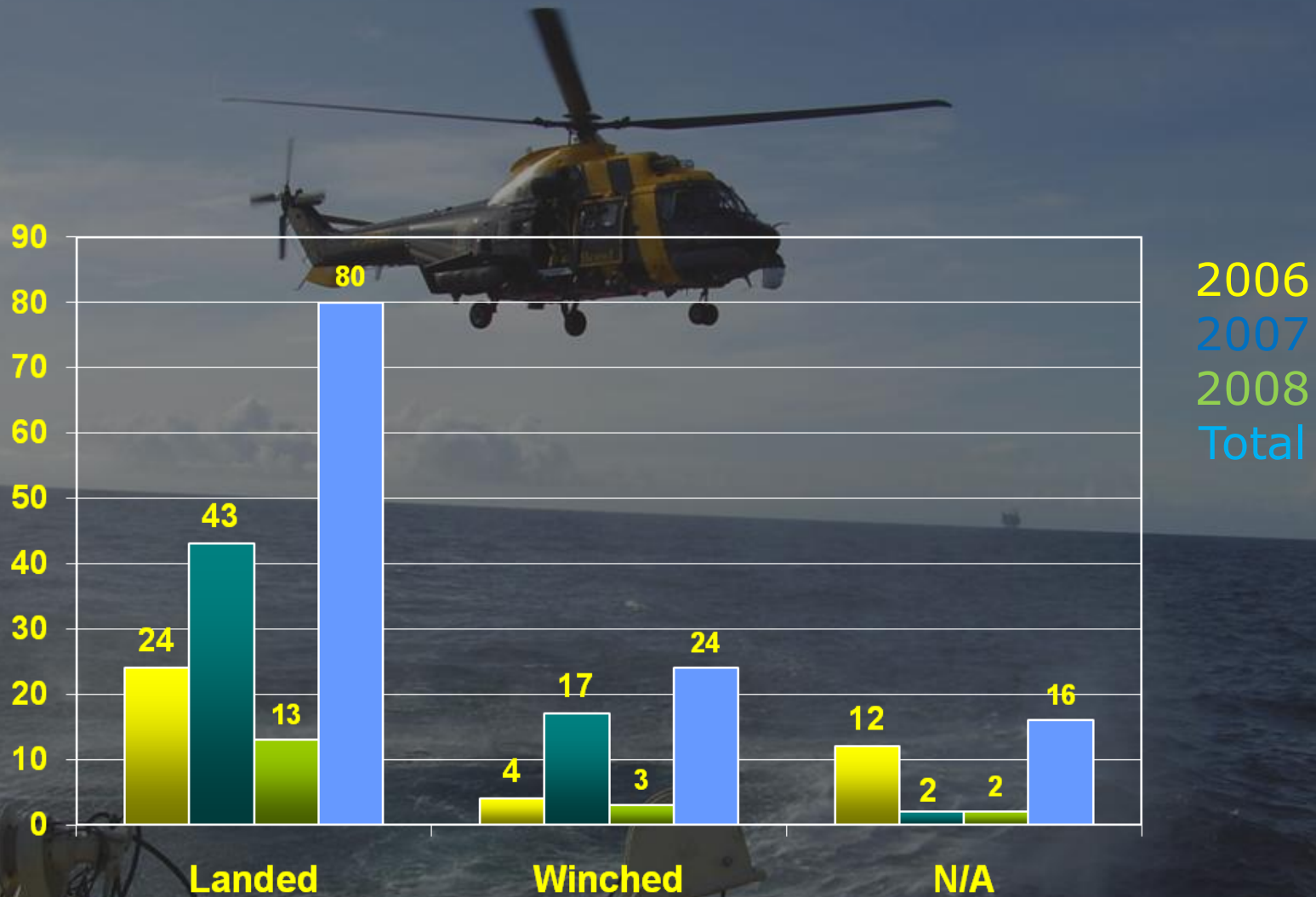
■ STROKE

■ TRAUMA

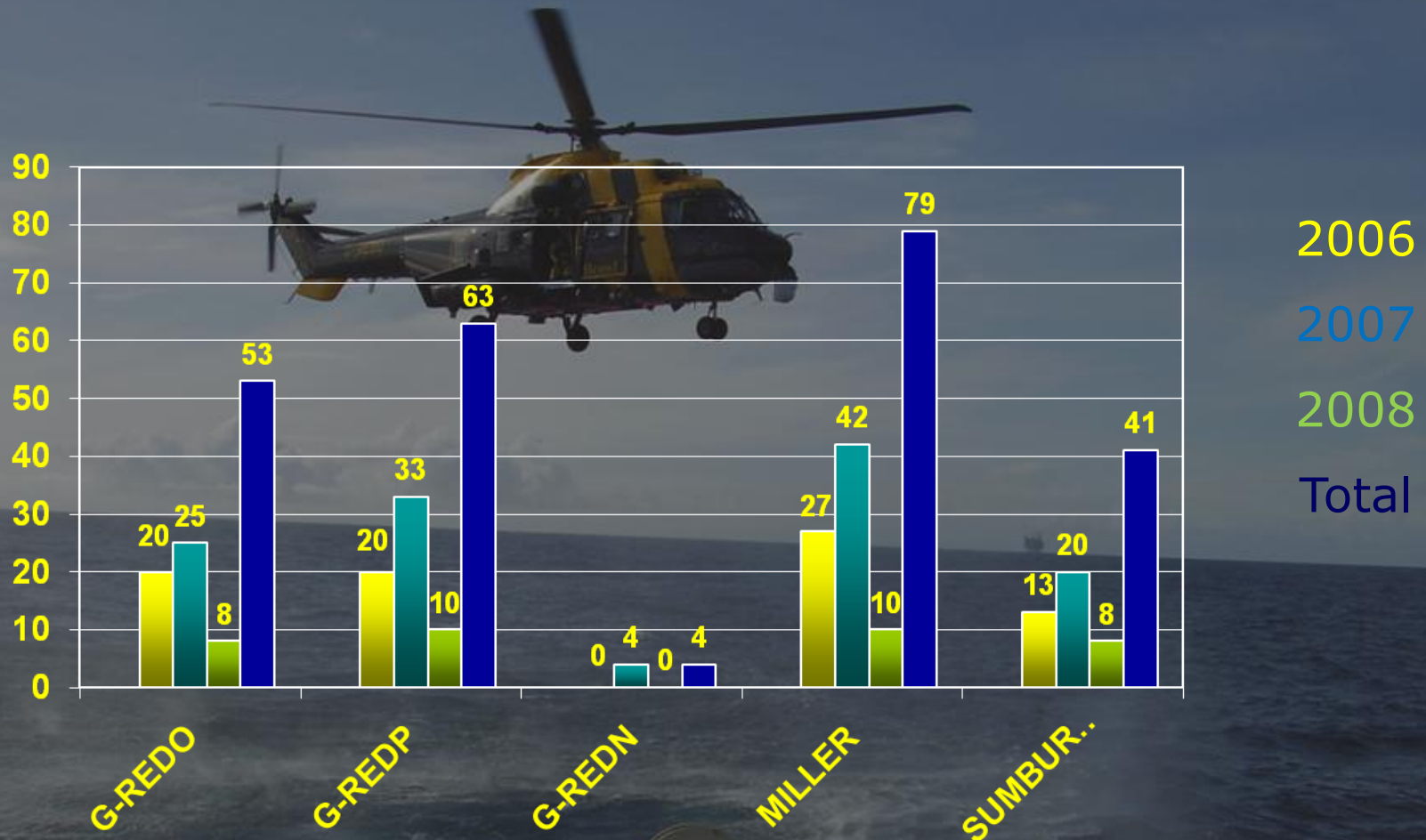
■ OTHER



# Method of Recovery

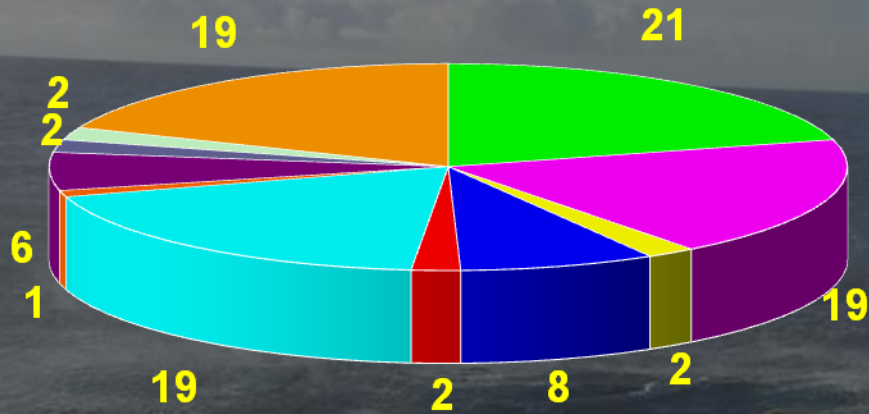


# Operational Task Figures



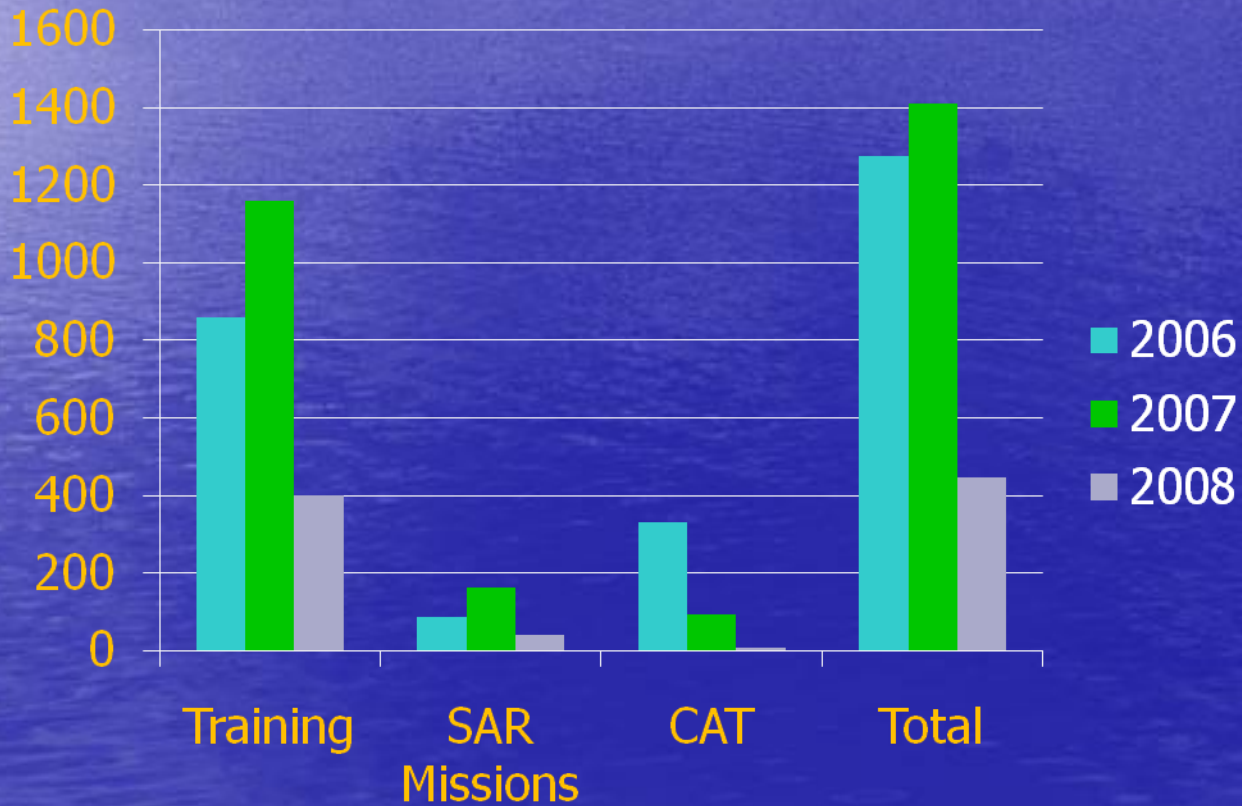
**Average Flight Time: 3 hours**

# Customers



- ARCC/HMCG
- BP
- CNR
- MARATHON
- PROSAFE
- SAS
- SHELL EXPRO
- STATOIL
- TALISMAN
- TRANSOCEAN
- OTHER

## Flying Hours



## Offshore Challenges

- Weather – High Winds, Fog
- Maintaining 24/7 standby cover
  - Training/FTL/SAR Ops
- Platform Integration
  - Platform vs CAA Rules
- Helideck Disruption
- Unscheduled Maintenance
- Corrosion

## All Weather Operations

- Day and Night 24/7
- VMC and IMC: IFR
  - Radar Coverage
  - Radio Coverage
    - Rigs NDB
- ARA: Airborne Radar Approach
- FMS: Flight Management System













## Jigsaw SAR Helicopter

- Eurocopter AS332L2 Super Puma
- Crew of four
- Seats: Nine pax (CAT Tasking)
- Nil Seats: Up to 25 survivors
- Radius of action: 190nm
- 30 minutes on scene
- 155 knots (180 mph)

## SAR Configuration

- Day/Night Auto-hover capability down to 40ft
- Fully automatic transition down facility in all weather conditions
- Weather Radar – search capability
- Semi Automatic search patterns
- FLIR – FLIR Systems Ultraforce II Forward Looking Infra Red
  - x54 zoom thermal imagery/day TV cameras
- Dual homers 121.5/243/406mhz





VCR MUST BE SWITCHED ON TO DISPLAY FLIR / TV IMAGE

BARCO MPRD 126 HB

HOIST

FLIR

CONSOLE LIGHTING

STM ICS

DO NOT TOUCH THE CONTROL PANELS

DO NOT TOUCH THE CONTROL PANELS

DO NOT TOUCH THE CONTROL PANELS

SP

ON

EX-OUT

2-TV

RDY

+20-

0 - 44

-20-

-40-

-60-

-80-

-100-

-120-

6

9

12

3

6

N 59°14.68' E 001°26.89'

2007-09-28

18:49:09



SP

ON

IFOU

FLIR

IR

RDY

+20  
0  
-20  
-40  
-60  
-80  
-100  
-120

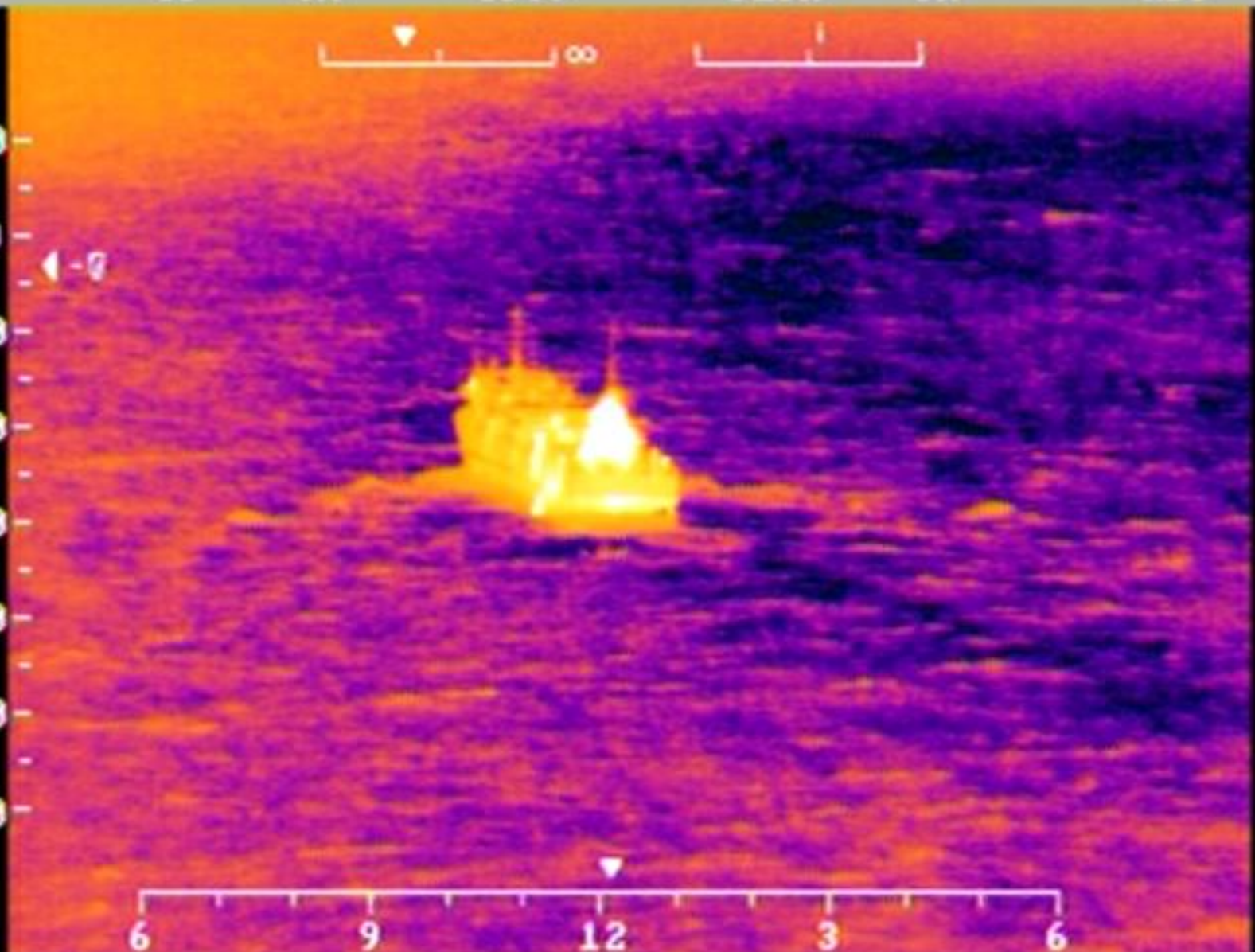
4-9

6 9 12 3 6

N 59°34.72' W 001°13.86'

2006-10-14

22:45:06



SP

POS

WFOU

FLIR

IR

RDY



+20

0

-20

-40

-60

-80

-100

-120

4-65

6

9

12

3

6

N 59°45.72' E 001°39.13'

2007-12-01

15:58:31

## Rescue Hoist

- Dual hoist installation  
Redundancy - Industry standard
- Primary  
Goodrich Electric – 250fpm / 290ft
- Secondary  
Goodrich Hydraulic – 180fpm / 246ft
- AFC joystick
- Hoist Camera





## Additional Equipment

- Satellite phone
- Satellite Flight Following
- CMA3000 Flight Management System
- Backup Trimble GPS
- 30 million candle power Nitesun
- Skyshout
- Air droppable Liferaft



## Medical Equipment

- Defibrillator
- Patient Monitors
- Extensive winchable First Response Bag (FRB)
- Medicines/drugs
- Oxygen/Entonox
- 2x Winchable stretchers







## Aircrew

- 19 Pilots / 19 Aircrewmen
- Four person crew – Two crews per base
- Two Pilots:
  - Captain - ex-military/civilian SAR or experienced North Sea
  - Co-Pilot – 2 year tour from crew change
- Two Aircrewmen:
- Winch Operator – ex-military/civilian SAR
- Winchman – ab-initio
  - Various backgrounds
  - Trained in-house

## Rostering

- Touring roster
  - 15 days on
  - 13 days off
  - 7 days Aberdeen
- Duty shift: 24 hours on/off
- Third week:
  - Pilots: Crew change or annual leave
  - Aircrewmembers: Medical Training or annual leave

## Maintenance

- 10 Jigsaw Engineers
- Two engineers per base - Eng/AF, Avionics
- Miller
  - No Hangar – JAR 145 Line
- Sumburgh
  - Hangar – JAR 145 Line/Base
- Aircraft base swap weekly
- Sunday – One hour notice
- Six monthly corrosion checks – ABZ
- Spare Aircraft – Limited SAR



DN

Bond

G-REDN

## Training

- 4 hours training available every shift
- 90 Day currency requirement
  - All SAR currency completed during tour
- Pilots: Annual flight simulator training
  - Helisim - France
- Aircrewmen: Medical Skills Revalidation
  - College of SAR Medicine - Wales
- All Aircrew – Annual SAR Checks
- CRM HUET BOSIET DG Medical

## Medical Qualification

- Pilots: First Aid Awareness
- Aircrewmembers:
  - SAR Technician (IEC Course)
  - SAR Paramedic (NHS recognised)
- College of SAR Medicine
  - IHCD Accreditation (National)
- National Standardisation
  - All UK/Irish SAR Winchmen



## Training Limitations

- Realism vs Safety
- CAA Exemptions – SAR
- Aircraft 40ft height limit
- .5nm visibility
- 300ft cloud base
- Sea state 6 (20ft waves)





DEA SERVER  
NASSAU

DEA SERVER  
NASSAU





SFPA

JURA  
LEITH  
IMO 9376624

G-REDO

Bond







BP MILLER  
16/8B





NO SMOKING

SAFETY LEADERSHIP

EMERGENCY KEYS

NO SMOKING

SAFETY LEADERSHIP

EMERGENCY KEYS

Control panel with 6 yellow buttons

Two yellow fire extinguishers

Shelf with books and papers

Black telephone

Desk with computer monitor and blue chair

Desk with laptop, mouse, and blue chair

Two red leather chairs in the foreground



Emergency  
Escape  
Hatch  
**EMERGENCY  
EXIT**



**The Dirty Dozen**  
List of common safety hazards  
Loss of Awareness Safety Risk  
1. Inattention  
2. Complacency  
3. Distraction  
4. Fatigue  
5. Impaired Judgment  
6. Poor Decision Making  
7. Lack of Focus  
8. Carelessness  
9. Overconfidence  
10. Poor Communication  
11. Lack of Training  
12. Poor Planning

**The Dirty Dozen**  
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STORES

China Sign



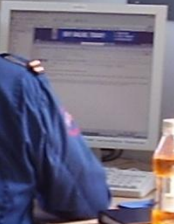
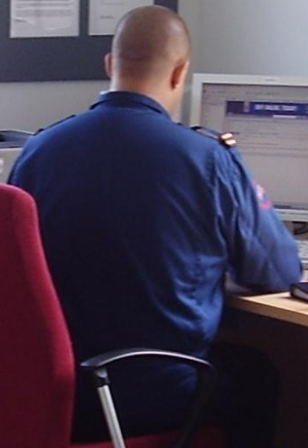
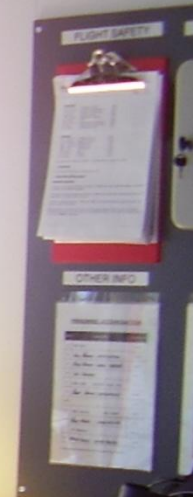
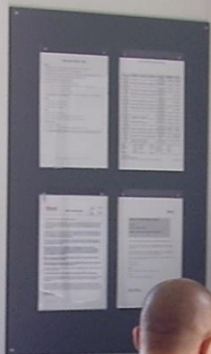




DAILY PROGRAMME			
DATE	TIMES	TASK	REMARKS

NOTES  
 NEW SCHEDULE C.A.      E NEW TIME TABLE  
 AND DIVERSITY SCHEDULE      12:30-14:00  
 TO LANCASHIRE      SCHEDULE INQUIRY  
 @1400 DAILY UP

DATE	TIME	TASK	REMARKS











Questions?