



subsea 7

Diving Discipline Workshop

November 2011

Alan Swenson

Agenda

Background

Training

Deep Diving & Operations

HSE Statistics

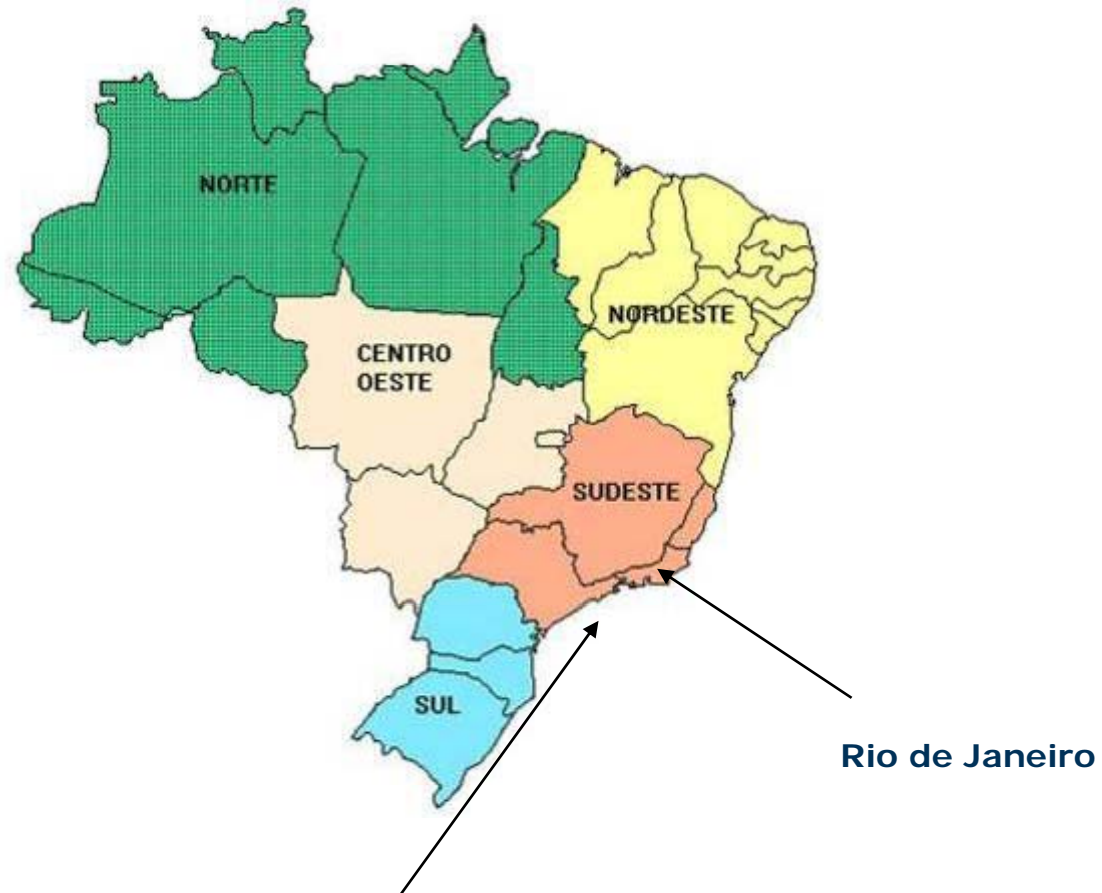
Operational Statistics

Background

Background

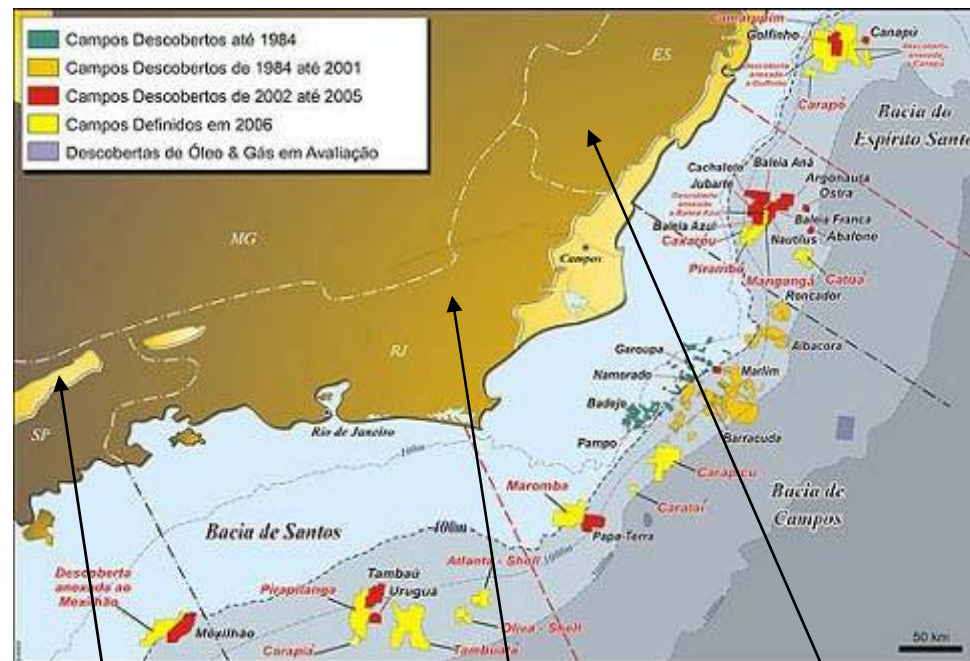
- Operating continuously in South America since 1972
- Pioneer in developing locally based subsea services, deepwater saturation diving and ROV operations
- Active in subsea engineering and construction, operating DSV's, PLSV's ships for Petrobras on long-term contracts

Background



**Main oil & gas production fields
are in the SE Region**

Background



São Paulo

Rio de Janeiro

Espírito Santo

Background

- Harrier PortCall



Background

- Macaé Harbour



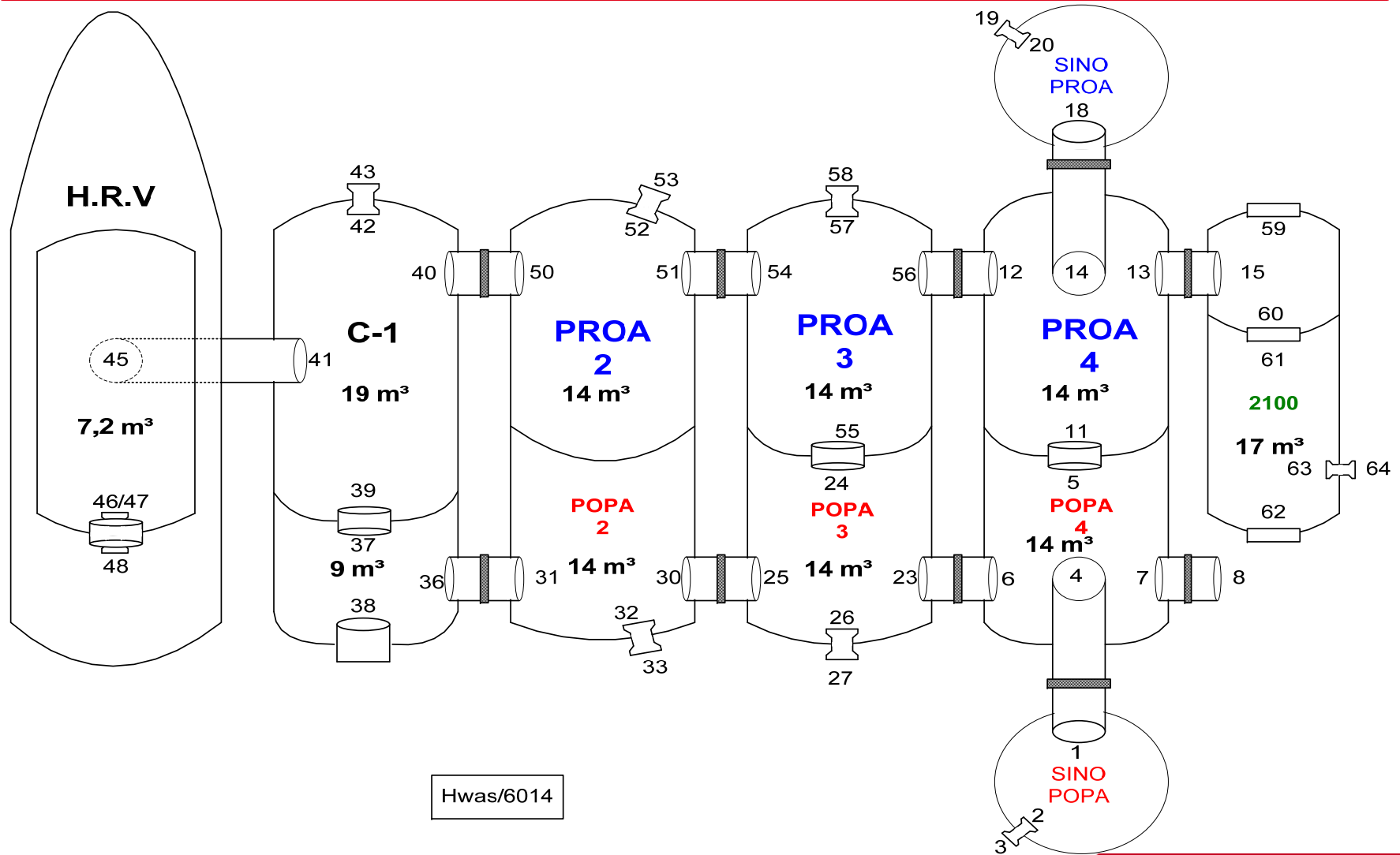
Background

Current DSVs in Brazil

- Gulmar Atlantis
- Toisa Pegasus
- Acergy Harrier



Hyperbaric Complex



Training

Training

- Brazilian Navy
- Horsesh Marine Dive school



Training

- Bell simulation
- Rescue Training



Training

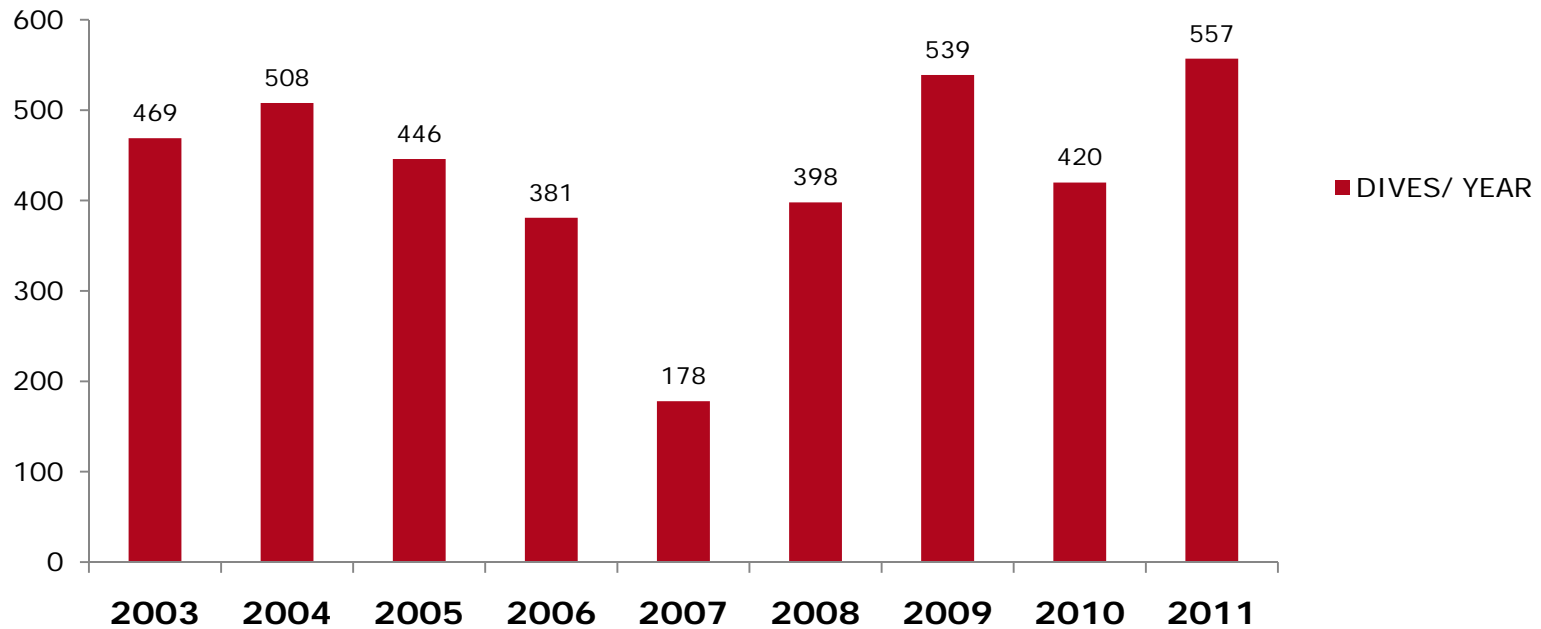
- Rescue



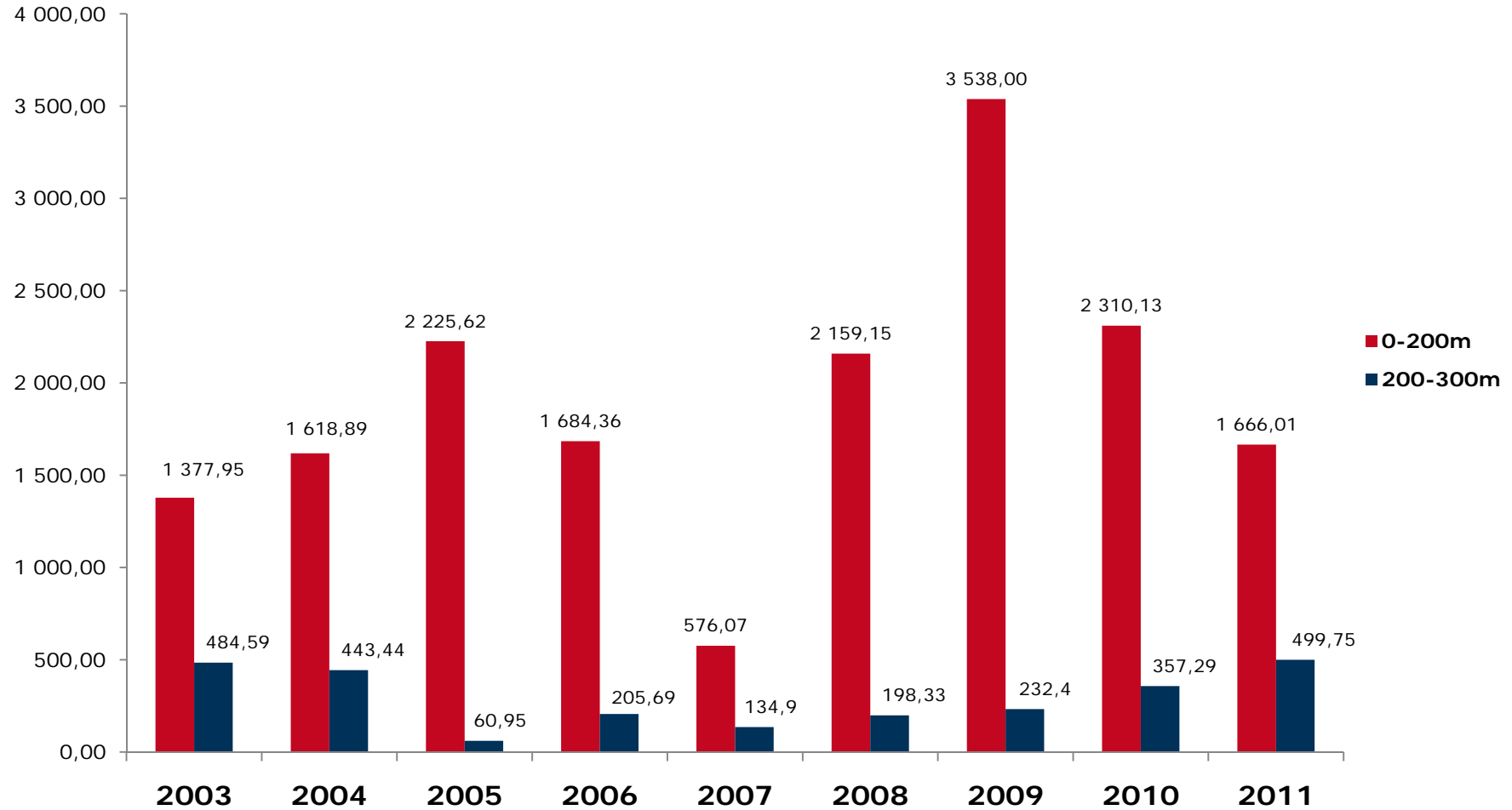
Deep Diving & Operations

Deep Diving & Operations

BELL RUNS



HOURS IN WATER



Deep Diving & Operations

- **Operational Limitation**
- 120 days / Year / Diver

- **Dive Limits**
- 6 hours in water until 210m
- 5 hours Between 211m and 260m
- 4 hours between 261m and 300m
- 3 hours between 301m and 350m

- 30 minute-rest between dives

Deep Diving & Operations

- **Local Rules:**

- a- Brazilian Navy NORMAN 15;
- b- Labour Ministry NR15;
- c- Collective Agreement (between union and companies)

- **Diving Procedures**

- Our procedures are based in the group's procedures with some differences because of our local rules. (NR 15 The Labour Ministry, Norman 15 Brazilian Navy)

HSE Statistics

HSE Statistics

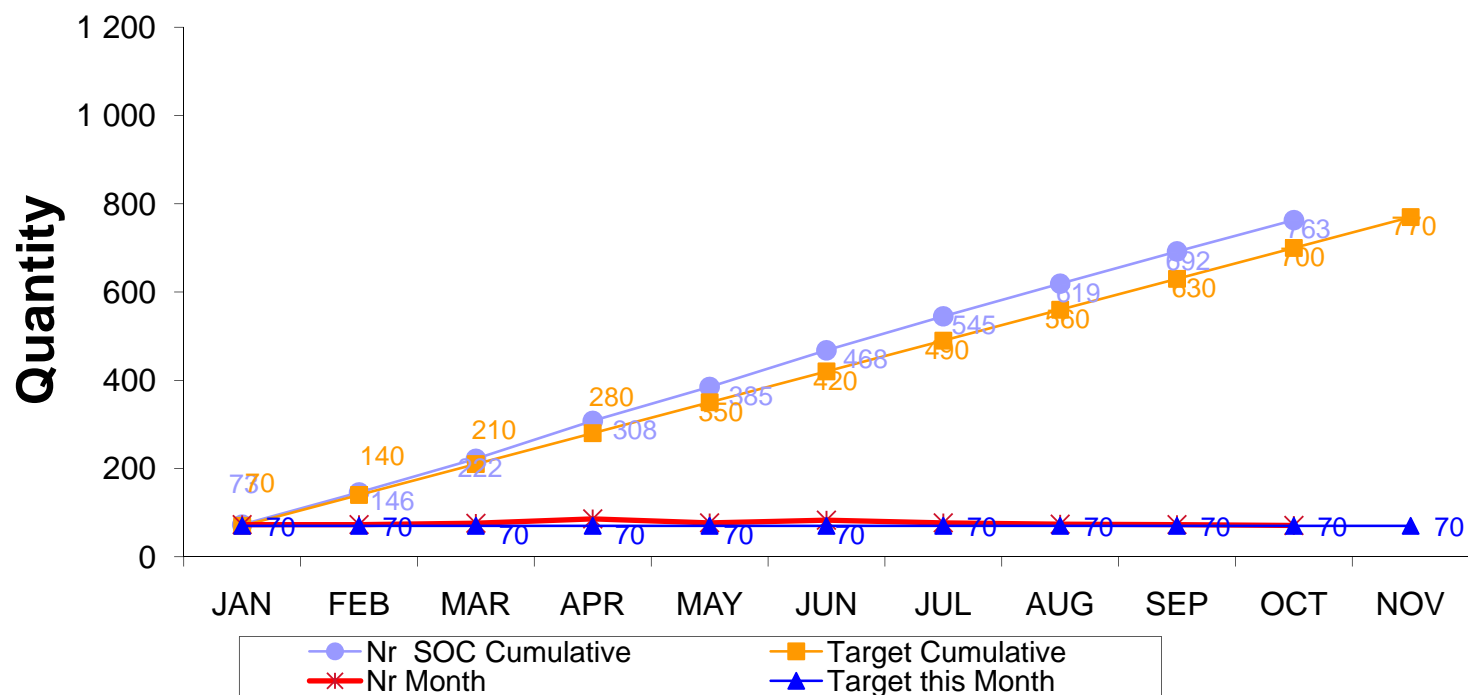
- HSE Performance
- No accident
- No DAFWC
- HOC's

HSE Statistics

- We have been working 2642 days with no DAFWC (7 years)
- We have been diving 11 years and 5 months with no DAFWC
- HOC's on Target (70 HOC`s / MONTH)

HSE Statistics

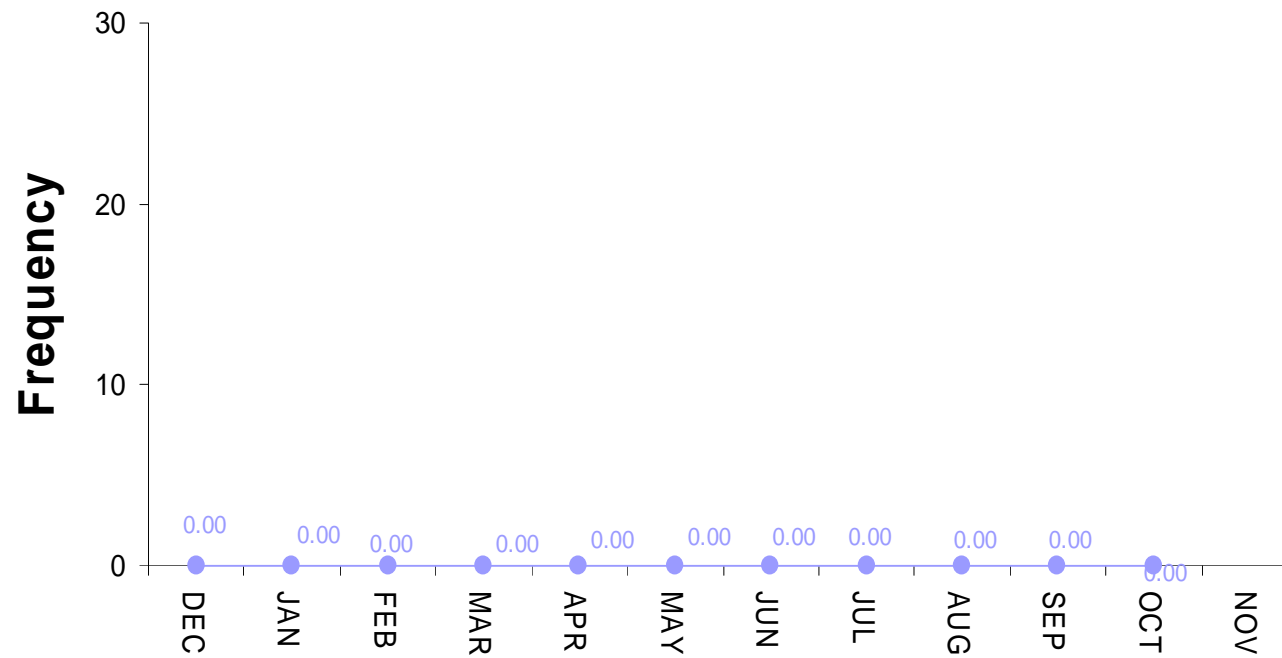
SO - Safety Observations Harrier



JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
73	146	222	308	385	468	545	619	692	763		
70	140	210	280	350	420	490	560	630	700	770	840
73	73	76	86	77	83	77	74	73	71		
70	70	70	70	70	70	70	70	70	70	70	70

HSE Statistics

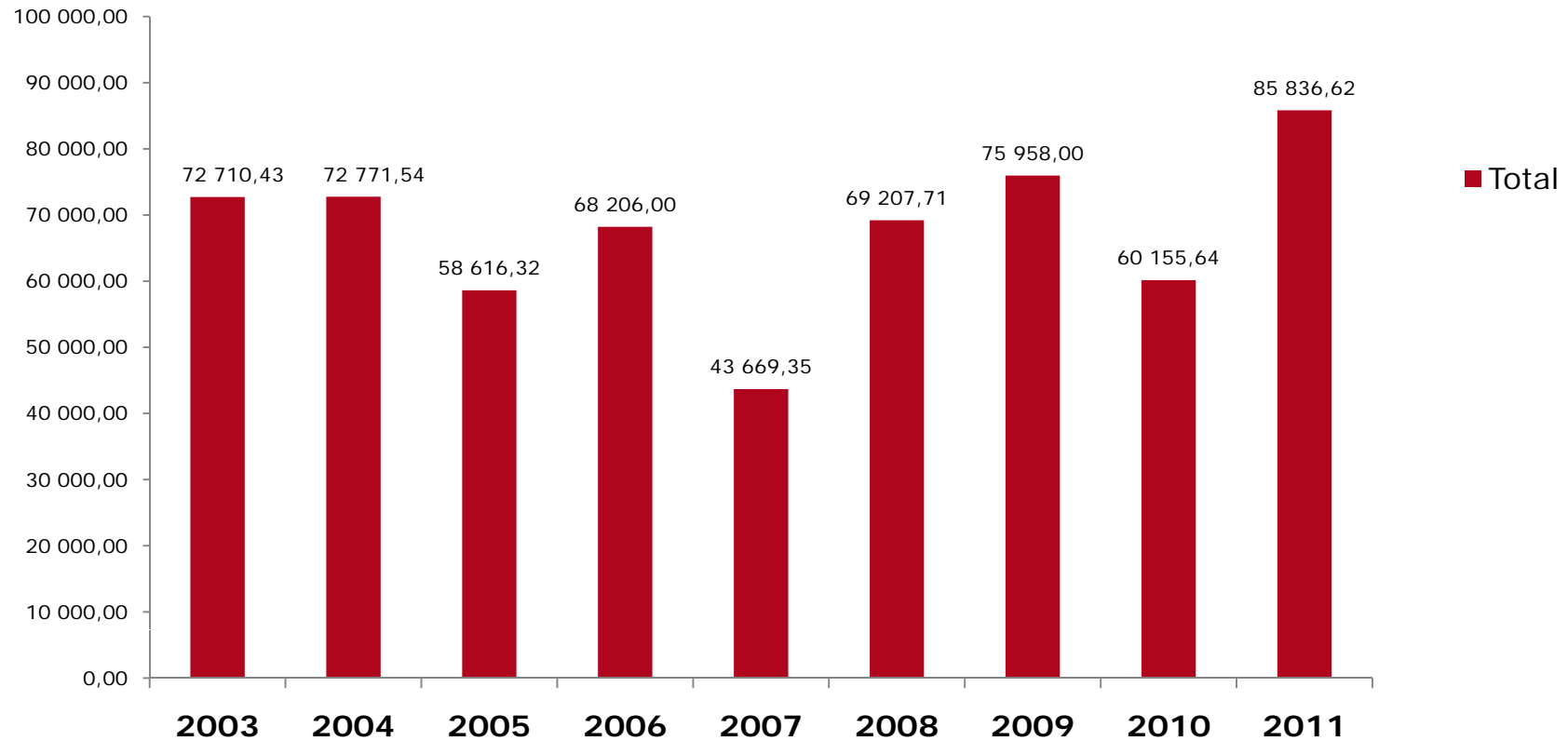
DAFWC - Days Away From Work Cases Frequency HARRIER



Operational Statistics

Operational Statistics

TOTAL HOURS SAT



Operational Statistics

GAS HELIUM CONSUMPTION / SODA SORB				HOURS IN SAT / DIVE				
YEAR	Nº. OF DIVES YEAR	YEAR CONSUMPTION HELIUM M ³	YEAR CONSUMPTION SS	CHAMBER	DIVE DEPTH < 200	DIVE DEPTH > 200	Total	AVERAGE MEN x DAY IN SAT
2003	469	32.425,80	16 TON	70.847,89	1.377,95	484,59	72.710,43	8.5
2004	508	32.879,52	15.5 TON	70.709,21	1.618,89	443,44	72.771,54	8.5
2005	446	27.070,44	15.1 TON	56.329,75	2.225,62	60,95	58.616,32	8.1
2006	381	27.776,76	17.3 TON	66.315,95	1.684,36	205,69	68.206,00	7.8
2007	178	20.928,48	8.9 TON	42.958,38	576,07	134,90	43.669,35	6.0
2008	398	26.053,56	14.7 TON	66.850,23	2.159,15	198,33	69.207,71	8.8
2009	539	31.405,92	15.3 TON	72.187,60	3.538,00	232,40	75.958,00	9.1
2010	420	29.463,84	14.8 TON	57.488,22	2.310,13	357,29	60.155,64	8.7
2011/ OCT	557	33.025,68	11.5 TON	77.658,93	1.666,01	499,75	85.836,62	11.8

SAFETY FIRST





seabed-to-surface

www.subsea7.com