

Offshore safety related to computer interfaces and information



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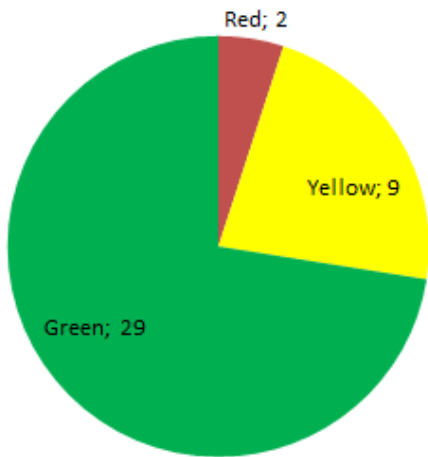
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Risk evaluation

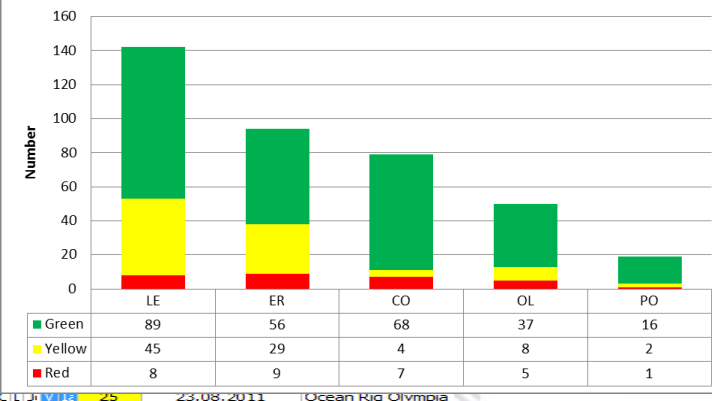
- Risk & unwanted incidents ranking

- Systems in place
 - Report incidents and near miss
 - Analyse material
 - Look for trends

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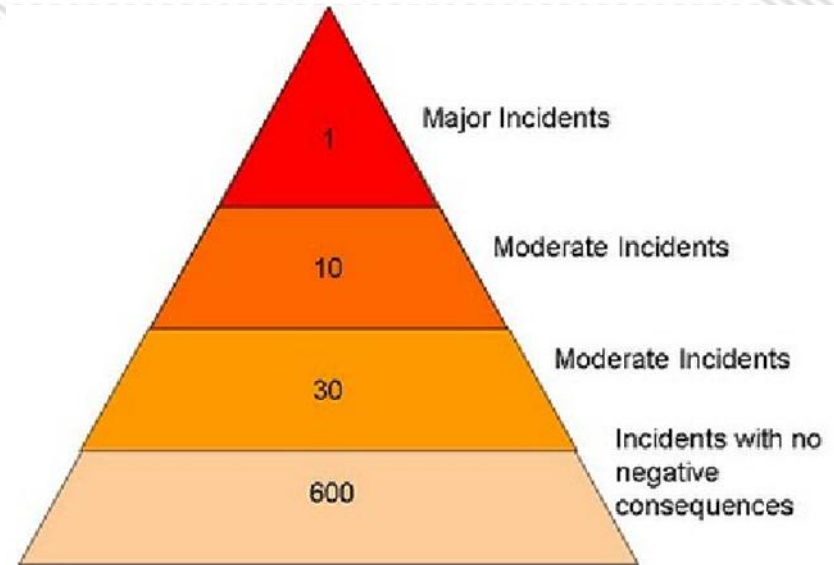


Accidents and near misses Ocean Rig



Risk definition

- **Risk=Practicable*Consequence**
- Risk to
 - Personel
 - Environment
 - Material



Risk Acceptance Matrix for Quantitative Risk Analysis

	Personal injury	External environment spill		Material damage [NOK]	Operating loss [NOK]	P				
		Oil	Chemicals			1	2	3	4	5
						Infrequent	1-5 years	6mth-1Year	14days-6mth	1-14 days
A	Death	> 2500 m3 or continuos	Major chemical spill	Extensive material damage	> 10 millions	ALARP	ALARP	U	U	U
B	Serious injury with possible disablement	> 500 m3	Large chemical spill	> 1 million	> 2 millions	ALARP	ALARP	ALARP	U	U
C	Serious injury	> 100 m3	Moderate chemical spill	> 250.000	> 250.000	←	ALARP	ALARP	ALARP	U
D	Medical treatment	> 1 m3	Minor chemical spill	> 50.000	> 50.000	A	←	ALARP	ALARP	ALARP
E	First aid injury	< 1 m3	Insignificant chemical spill	< 50.000	< 50.000	A	A	A	ALARP	ALARP

P – Probability

C – Consequence

A – Acceptable risk

ALARP – Risk reducing measures to be evaluated based on cost / benefit

U – Unacceptable risk, risk-reducing measures to be implemented.

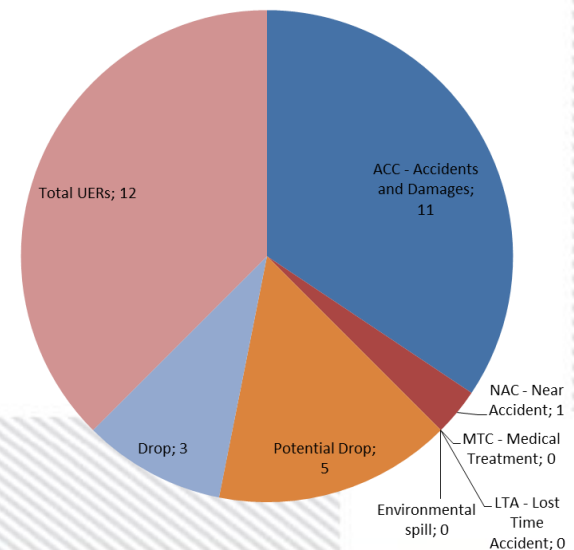
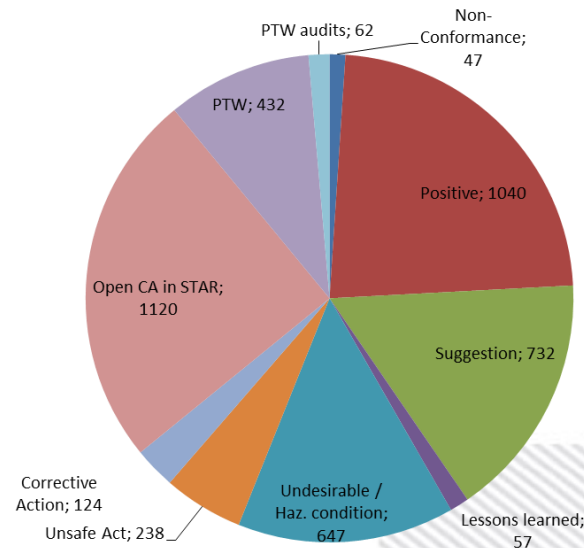
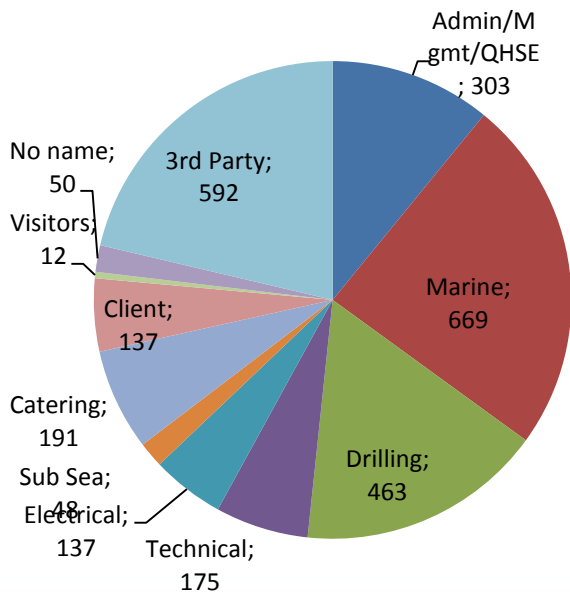
Care philosophy

- c** Commitment in our work
- a** Accountability for our job performance
- r** Respect for each other and our environment
- e** Empowerment of our employees, so they may carry out their work according to their responsibilities

Mapping of HSE & risks

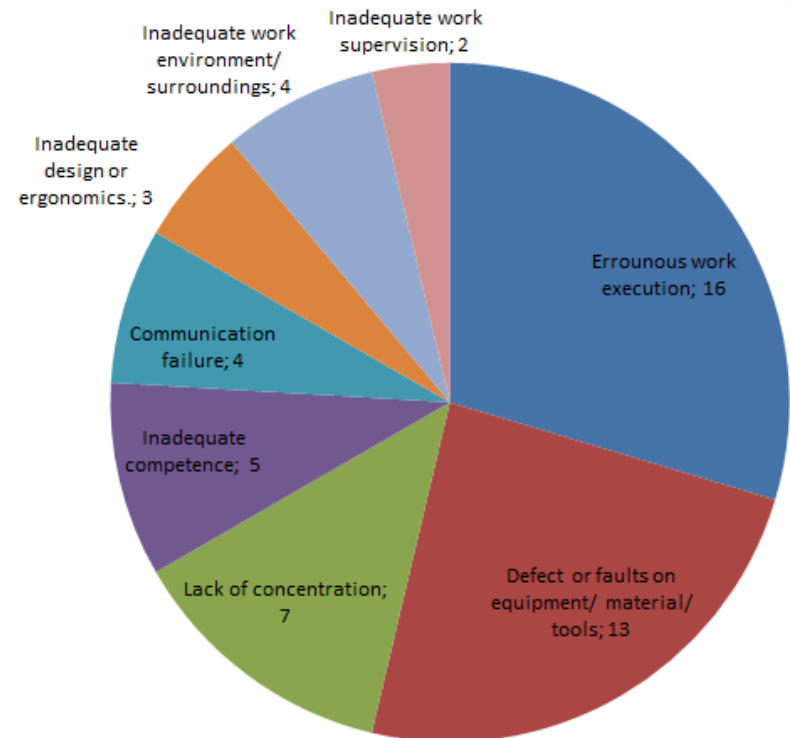
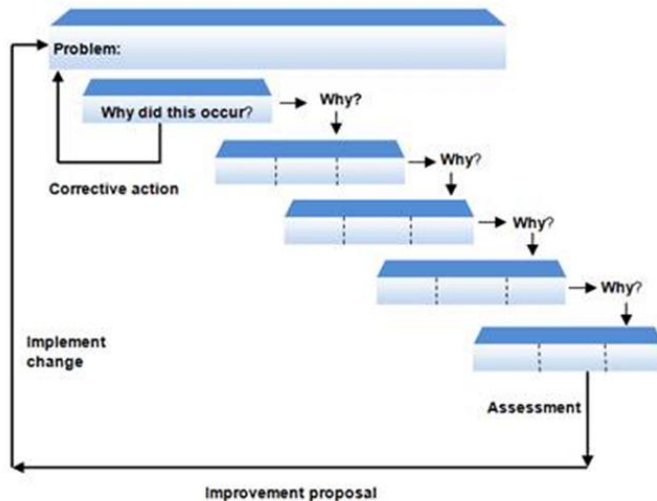
- Care Cards

Register incidents: Positive and negative



Cause assesment

- Direct causes vs underlying causes
- Cause persepective
 - Human
 - Technical
 - Organisational
- 5 Whys technique
 - Look for underlying causes
 - Eliminate root of the problem



HSE analyse

QRA: Quantity Risk Assessment

Qualitative Risk Matrix

Safe job analysis – Chemical analysis

Risk assesment prompt card

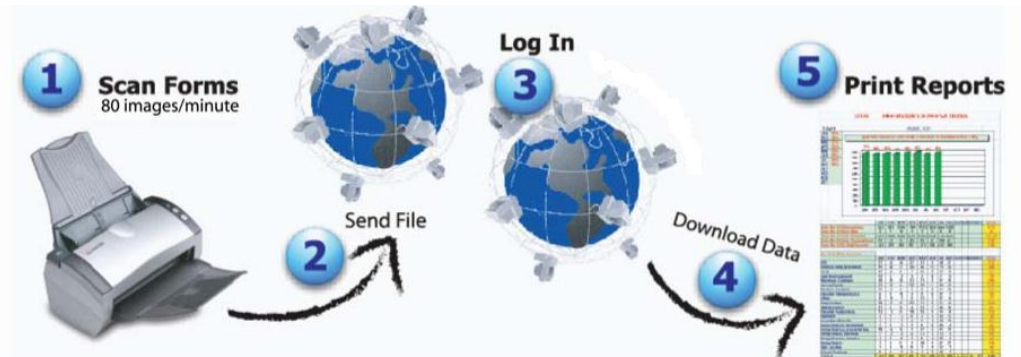
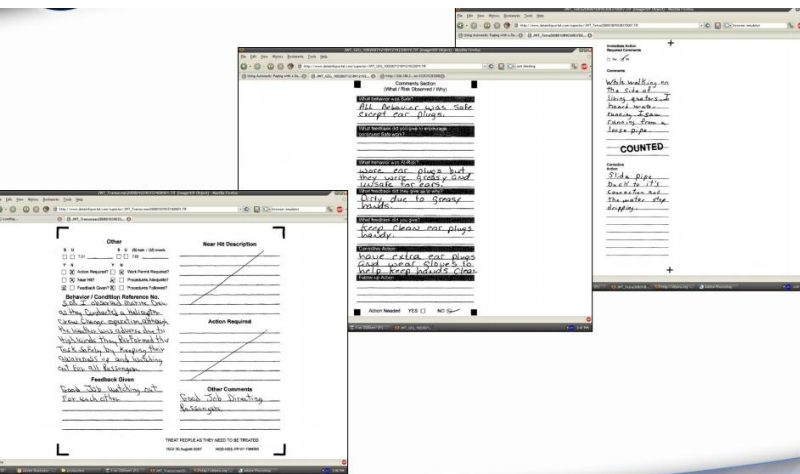
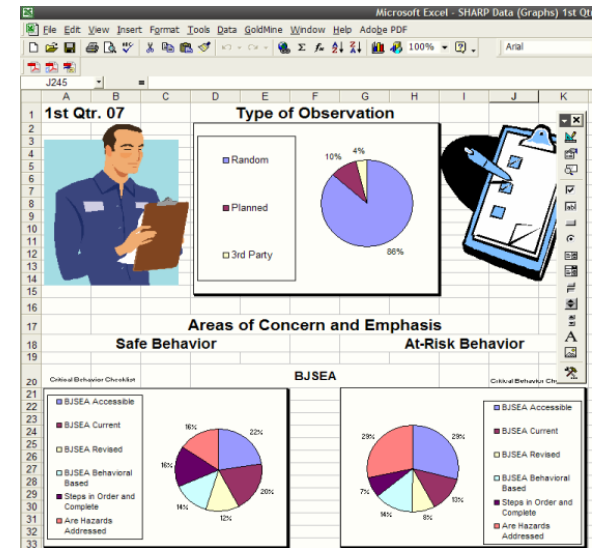
Risk reduction

- ALARP: As Low As Reasonable Practicable
- BAT: Best Available Technology
- Precation principles
- Substitution principles

Technology

Can technology make our job easier and increase organization's accident prevention effectiveness?

What technology is the best available?



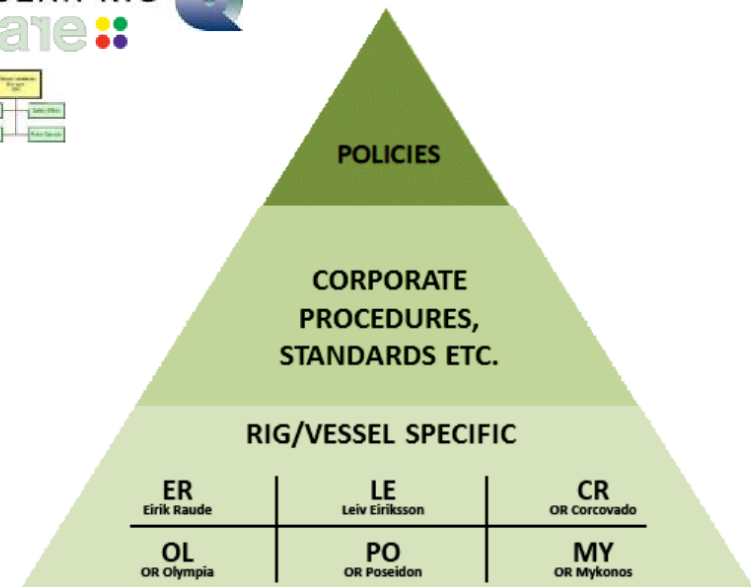
Online training portal

- Training portal for keeping track over online exams

<div> <div>Active courses</div> <div>Completed courses</div> <div>Compliance plan</div> <div>Merge users</div> </div> <div> <input type="text"/> <div>Choose course provider</div> </div>						
Course Title	Course provider	Completed	Valid Until	Course certificate	Access	
New Start - Care for Safety		2011-06-07	Indefinite	 	Go to course	
New Start - Permit-To-Work		2011-06-07	Indefinite	 	Go to course	
SOX Ethics course		2011-06-07	Indefinite	 	Go to course	
CO-PROG-34 Control of Substances Hazardous to Health (COSHH). R2		2011-06-15	Indefinite	 	Go to course	
CO-PROG-06 Use of High Pressure Spraying Equipment exam. R4		2011-06-23	Indefinite	 	Go to course	
CO-PROG-11 Travel Regulations for Offshore Employees exam. R10		2011-07-01	Indefinite	 	Go to course	
CO-PROG-19 Report of Equipment Failure-Damage exam. R7		2011-07-04	Indefinite	 	Go to course	
CO-PROG-13 Permit-To-Work exam. R19		2011-06-10	Indefinite	 	Go to course	
CO-PROG-09 Work Over Open Sea exam. R3		2011-07-04	Indefinite	 	Go to course	
CO-PROG-12 Lifting Operations exam. R10		2011-07-04	Indefinite	 	Go to course	
CO-PROG-04 Storage and Use of Radioactive Sources exam. R3		2011-07-01	Indefinite	 	Go to course	
CO-PROG-28 Yearly Program for Emergency drills exam. R1		2011-07-04	Indefinite	 	Go to course	
CO-PROG-18 Lock-out/Tag-out Procedure exam. R1		2011-07-01	Indefinite	 	Go to course	
CO-PROG-09 Installation/Removal of Blinds and Opening of Flanges exam. R4		2011-06-23	Indefinite	 	Go to course	
CO-PROG-11 Risk Acceptance Criteria exam. R3		2011-07-04	Indefinite	 	Go to course	
CO-PROG-07 Welding, Flame-cutting and other hot work onboard exam. R7		2011-06-23	Indefinite	 	Go to course	
CO-PROG-14 Notification, Reporting, Invest. and Follow-up of UERs exam. R12		2011-06-15	Indefinite	 	Go to course	
CO-PROG-12 Electrical Isolation exam. R6		2011-06-23	Indefinite	 	Go to course	
CO-PROG-16 Working at Heights. R2		2011-07-01	Indefinite	 	Go to course	
CO-PROG-19 HSE Inspections onboard exam. R6		2011-07-04	Indefinite	 	Go to course	
CO-PROG-10 Training Procedure exam. R15		2011-07-04	Indefinite	 	Go to course	
CO-PROG-21 Election of Safety Delegates exam. R6		2011-07-04	Indefinite	 	Go to course	
CO-POL Ocean Rig Policies exam		2011-07-04	Indefinite	 	Go to course	
CO-PROG-13 Construction and Use of Scaffolding exam. R5		2011-07-04	Indefinite	 	Go to course	
CO-PROG-07 Safety Alerts, Prod bull or Leg Upd exam. R2		2011-06-15	Indefinite	 	Go to course	
CO-PROG-15 Registration, Notification and Follow up of Work Related Illness exam. R4		2011-07-04	Indefinite	 	Go to course	
CO-PROG-10 Use of HSE Analysis exam. R5		2011-06-10	Indefinite	 	Go to course	
CO-PROG-18 Safety Introduction for Newly Arrivals onboard exam. R4		2011-06-10	Indefinite	 	Go to course	
CO-PROG-25 Handling of Hazardous Substances exam. R10		2011-06-15	Indefinite	 	Go to course	
CO-PROG-20 HSE Related meetings exam. R7		2011-06-15	Indefinite	 	Go to course	
XO-EPII Emergency Preparedness Manual exam		2011-07-04	Indefinite	 	Go to course	
CO-PROG-22 Portable Electrical Equipment exam. R1		2011-07-04	Indefinite	 	Go to course	
CO-PROG-12 Safe Job Analysis and Risk Assessment exam. R6		2011-06-08	Indefinite	 	Go to course	
CO-PROG-08 Helicopter Operation exam. R6		2011-06-23	Indefinite	 	Go to course	
CO-PROG-27 Waste management exam. R3		2011-06-15	Indefinite	 	Go to course	
Confined Space - Theory and Exam		2011-06-28	Indefinite		Go to course	
Working at Heights & Fall Protection Equipment - theory and exam		2011-06-28	Indefinite		Go to course	

Structure of SMS

- 3 levels of procedures:
 - Policies
 - Corporate procedures
 - Area/Rig specific procedures
- Available electronically and as hard copies
- 154 procedures, not incl operations manuals...

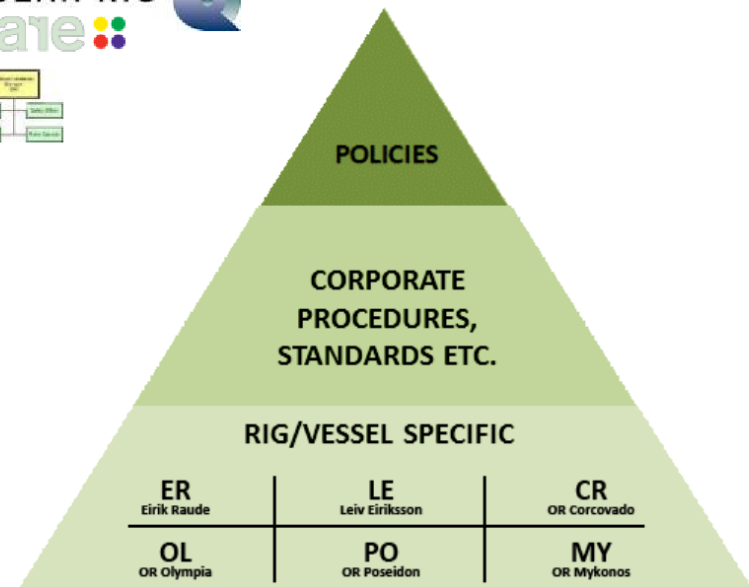


QUICK TITLE SEARCH



Training and competence – in-house

- Easy access to essential procedures
- Use either triangle or organogram
- Ensurance of procedure knowledge
 - Company's confidence
 - Individual's confidence



QUICK TITLE SEARCH



POSITION

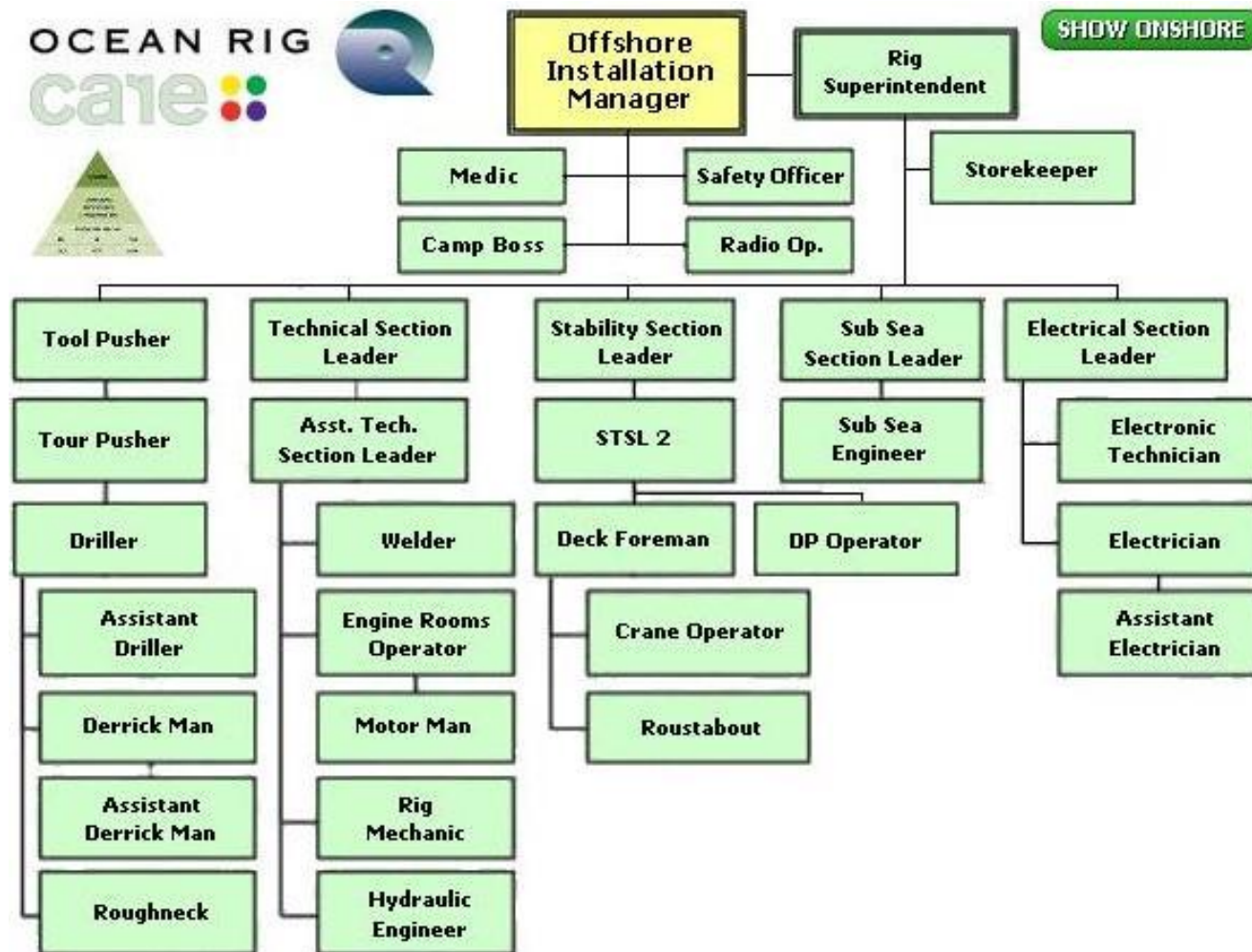
CORPORATE PROCEDURES



Offshore Personnel

OCEAN RIG EMPLOYEES

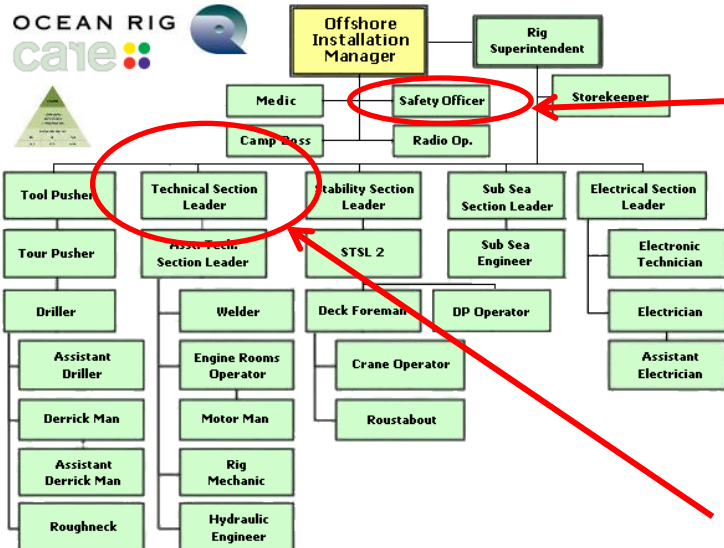
	CO-PRO/3-01 Appointment of Offshore Personnel	CO-PRO/3-02 Registration and control of wage and Travel Expenses	CO-PRO/3-03 Grouping of Personnel Aboard a Mobile Offshore unit	CO-PRO/3-04 Qualification Requirements	CO-PRO/3-05 Exemption from Qualification Requirements	CO-PRO/3-06 Planning Personnel Requirements	CO-PRO/3-07 Personnel Development Offshore	CO-PRO/3-09 Procedure for Promotion	CO-PRO/3-10 Training Procedure	CO-PRO/3-11 Travel Regulations for Offshore Employees	CO-PRO/3-12 Leave/Laying-off	CO-PRO/3-13 Termination on the Norwegian Continental Shelf	CO-PRO/3-14 Personnel Files	CO-PRO/3-15 Communication with the Authorities and with Clients	CO-PRO/3-16 Publication and Distribution of Working Rules	CO-PRO/3-18 Establishing a Shift Plan and Working Hours Control	CO-PRO/3-19 Termination of Employment outside the Norwegian Continental Shelf
OIM	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Medic										X						X	
Radio Operator										X							
Safety Officer	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Rig Superintendent										X							
Materials Man										X							
Toolpusher	X	X	X	X	X	X	X	X	X	X	X	X			X		X
Tour Pusher										X							
Driller										X							
Ass. Driller										X							
Derrick Man										X							
Ass. Derrick Man										X							
Roughneck										X							
Technical Sec. Leader	X	X	X	X	X	X	X	X	X	X	X	X			X		X
Ass. Tech. Sec. Leader										X							
Welder										X							
Engine Rooms Op										X							
Motor Man										X							
Rig Mechanic										X							
Hydraulic Engineer										X							
Stability Sec. Leader	X	X	X	X	X	X	X	X	X	X	X	X			X		X
STSL 2										X							
DPO										X							
Deck Foreman										X							
Crane Operators										X							
Roustabout										X							
Sub Sea Sec. Leader	X	X	X	X	X	X	X	X	X	X	X	X			X		X
Sub Sea Eng										X							
Elec Sec. Leader	X	X	X	X	X	X	X	X	X	X	X	X			X		X
Elec. Eng.										X							
Electrician										X							
Ass. Electrician										X							



SHOW ONSHORE

QUICK TITLE SEARCH

New structure on intranet – position based



QUICK TITLE SEARCH

RC 8 - 24/Nov/2010



Requirements for Safety Officer

Job Description

Click [here](#) to view job description for this position.

Essential Procedures

- CO-QHSE Management System Manual
- CO-OEP OR Onshore Emergency Respon's Plan
- CO-POL-MMM Maintenance Policy
- CO-POL-ETHICS Business Ethics Policy
- CO-POL-ABUSE Substance Abuse Policy
- CO-PRO/3-10 Training Procedure
- CO-PRO/5-05 Modifications on drilling units
- CO-PRO/5-07 Welding Flame Cutting and other hot work onbo
- CO-PRO/5-10 Opening, Entering-Work in tanks and enclosed s
- CO-PRO/5-13 Construction and Use of Scaffolding
- CO-PRO/5-19 Report of Equipment Failure/Damage/Loss
- CO-PRO/6-04 Storage and Use of Radioactive Sources
- CO-PRO/6-08 Helicopter Operation

Requirements for TESL

Required training / certification

Required in-house training

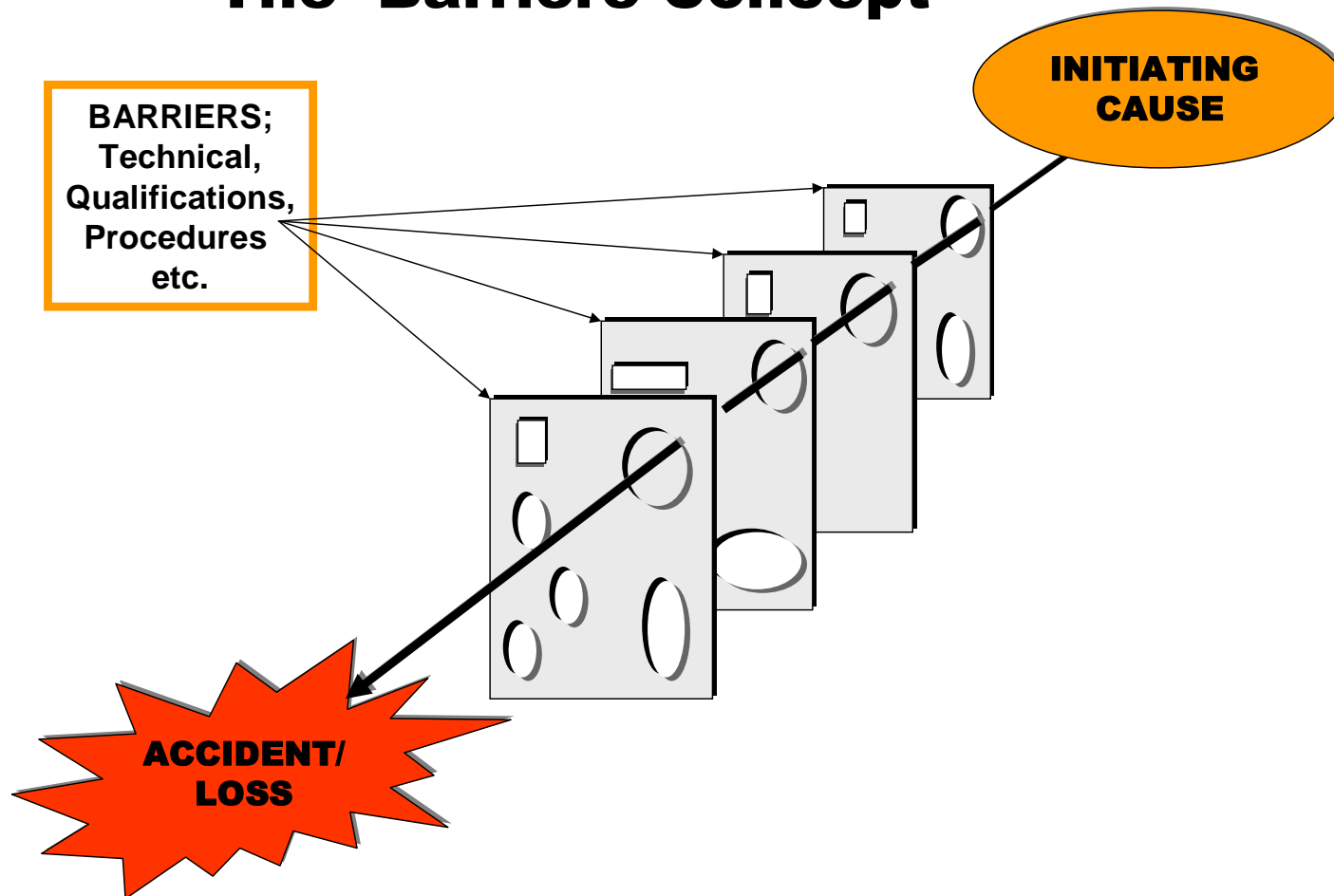
➤ (Mintra information is ongoing 22/11-20

Required good knowledge in procedu

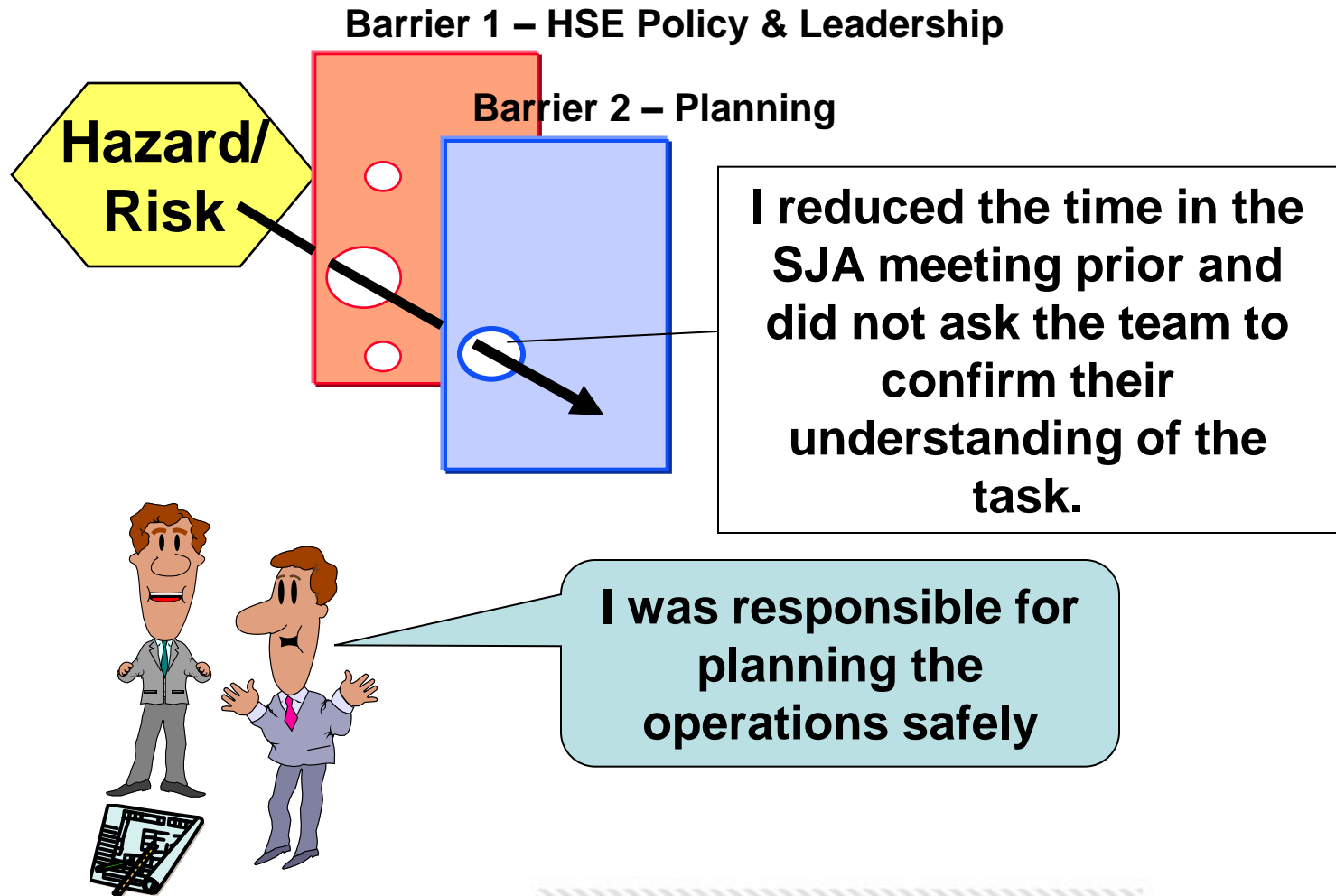
- CO-QHSE Management System Manual
- CO-MMM Maintenance Management M
- CO-OEP OR Onshore Emergency Respon
- CO-POL-HESQ HES&Q Policy
- CO-POL-MMM Maintenance Policy
- CO-POL-INFO Information Security Polic
- CO-POL-ETHICS Business Ethics Policy
- CO-ISM ISM Code designated Person
- CO-POL-ABUSE Substance Abuse Policy

Barriers – swiss cheese model

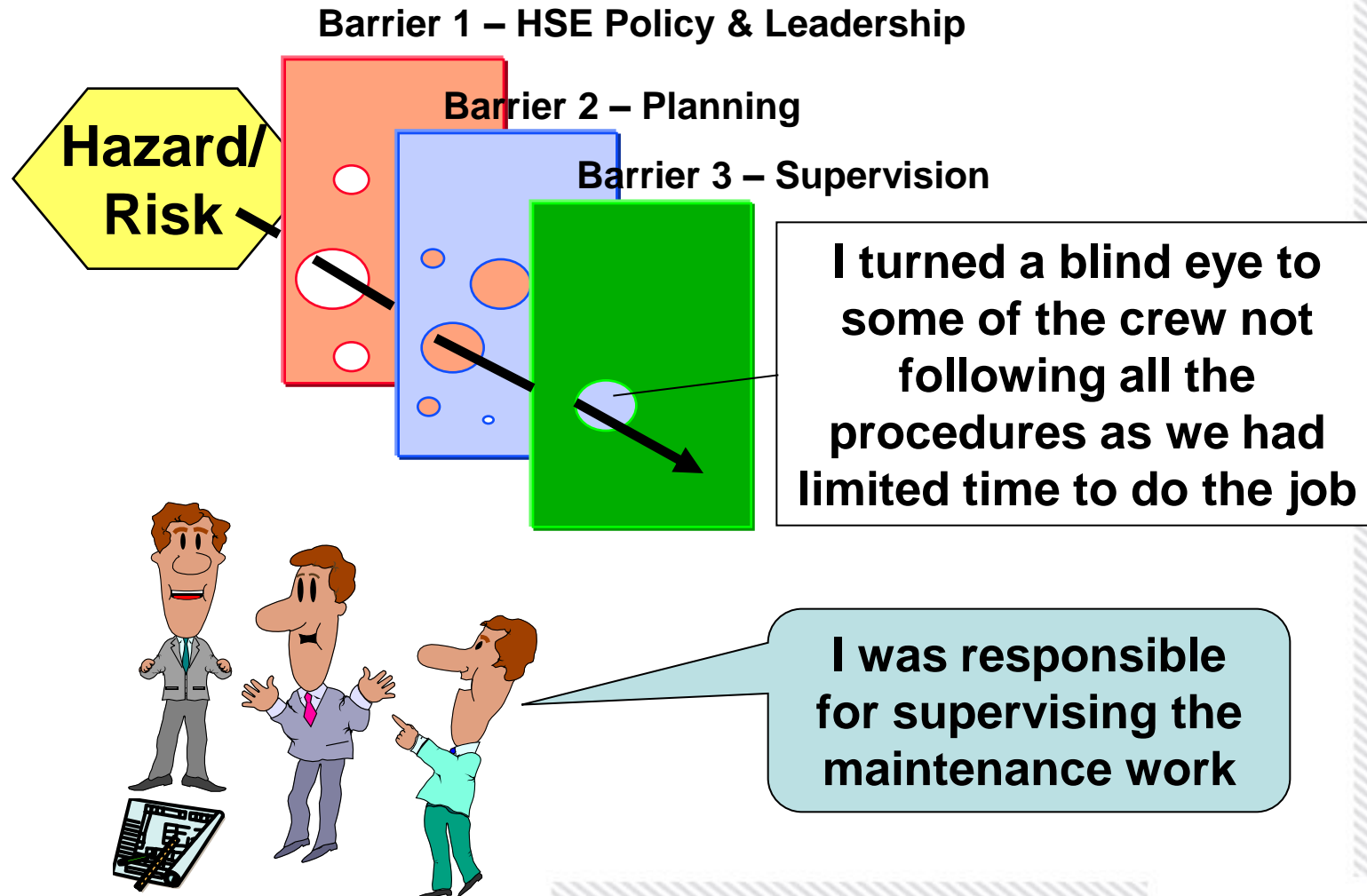
The Barriere Concept



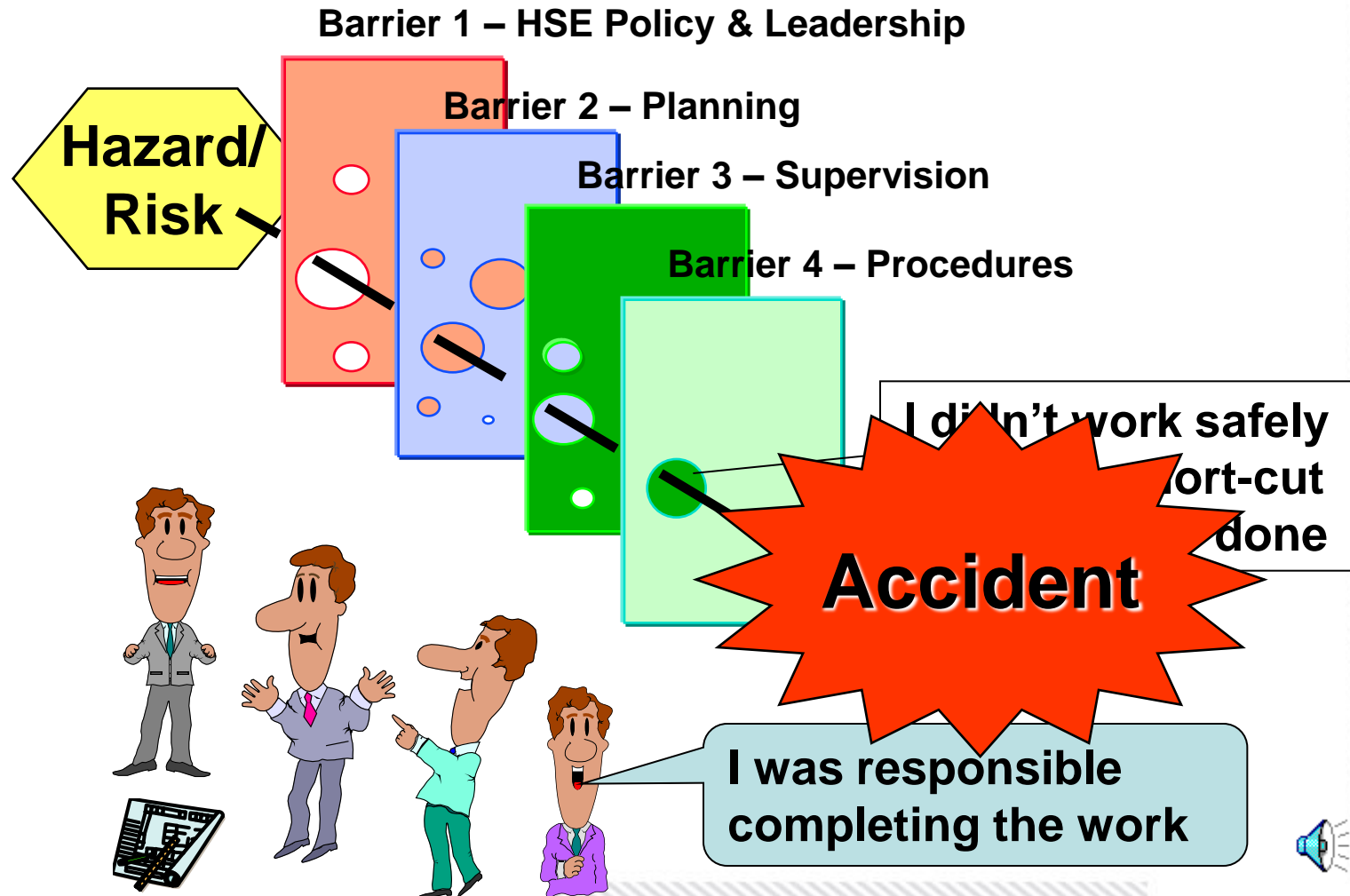
We are all responsible for managing HSE



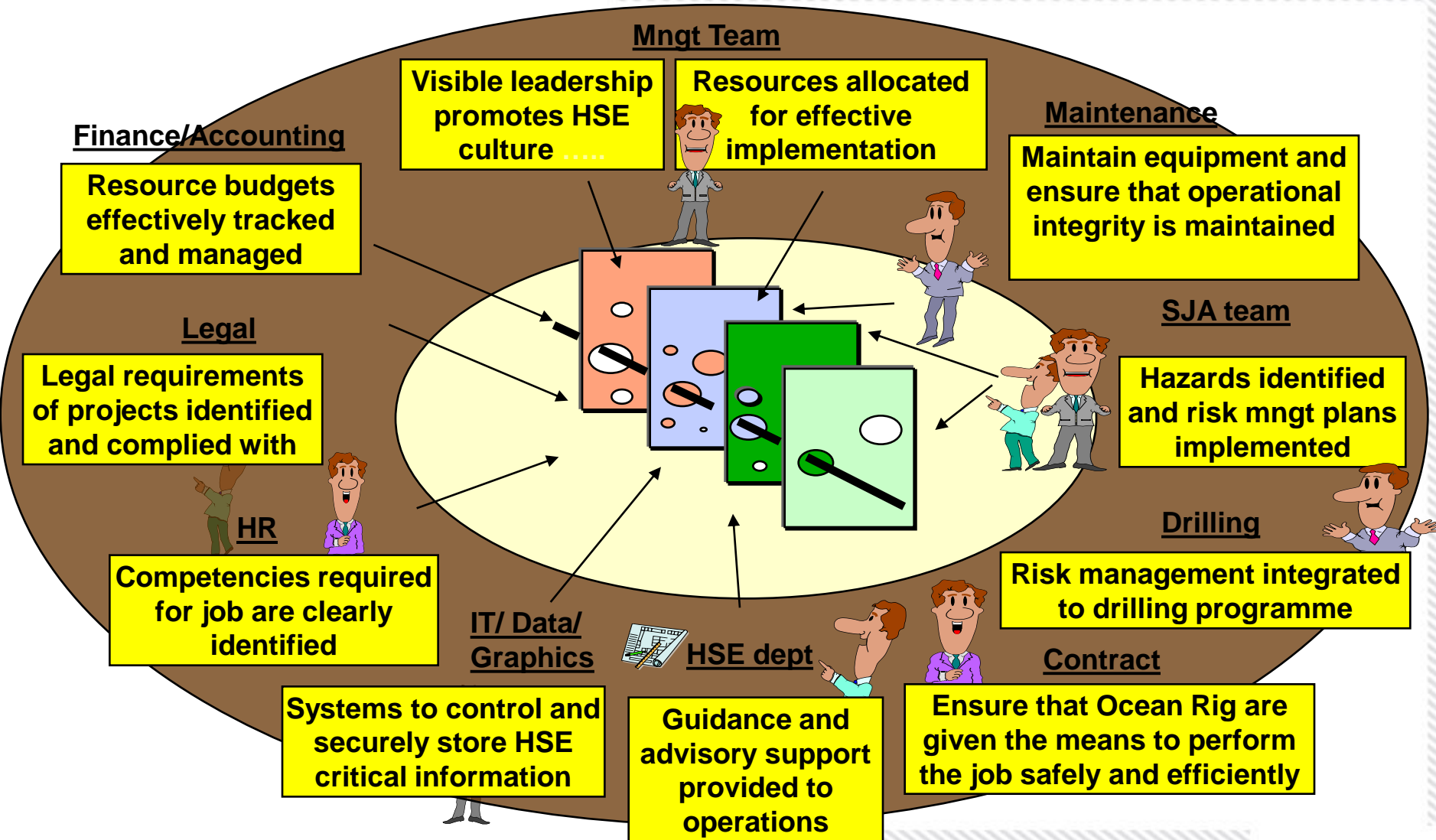
We are all responsible for managing HSE







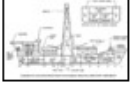





We are all responsible for managing HSE



We all have a part to play



Deadliest Accidents

	Incident	Fatalities
	1. <u>Piper Alpha</u> Occidental's Piper Alpha platform was destroyed by explosion and fire in 1988. 167 workers were killed in the blaze.	167
	2. <u>Alexander L. Kielland</u> In 1980, the accommodation rig Alexander L. Kielland capsized during a storm after a leg support brace failed.	123
	3. <u>Seacrest Drillship</u> The Seacrest drillship capsized in 1989 during Typhoon Gay, with the loss of 91 crew.	91
	4. <u>Ocean Ranger</u> A ballast control malfunction caused the Ocean Ranger to capsize during a ferocious storm in the North Atlantic in 1982, with the loss of all hands.	84
	5. <u>Glomar Java Sea Drillship</u> Another storm fatality, the Glomar Java Sea capsized and sank during Typhoon Lex in 1983 with the loss of all on board.	81
	6. <u>Bohai 2</u> In 1979, the jack-up Bohai 2 capsized and sank in a storm while on tow off the coast of China.	72
	7. <u>Brent Field Chinook Helicopter</u> A Chinook helicopter shuttle between the Brent Field and Sumburgh crashed into the North Sea in 1986 with only two survivors.	45
	8. <u>Enchova Central</u> During a blowout on the Enchova Central off Brazil, 42 workers lost their lives attempting to evacuate the platform.	42
	9- <u>C. P. Baker Drilling Barge</u> Built in 1962 using an uncommon catamaran design, the C. P. Baker drilling barge burned and sank after a shallow gas blowout.	22
	9- <u>Mumbai (Bombay) High North</u> A support vessel collided with Mumbai High North in 2005, rupturing a riser and causing a major fire that destroyed the platform.	22
	9- <u>Usumacinta</u> Storm winds caused the Usumacinta jack-up to strike the adjacent Kab-101 platform, resulting in a fatal evacuation and blowout in 2007.	22

Offshore Blowouts



Five Worst Blowouts

1. Sedco 135F and the IXTOC-1 Well

In 1979, the IXTOC-1 blowout flowed uncontrollably in the Bahia de Campeche, Mexico until it was capped 9 months later.

Volume Released

3,500,000 barrels

2. Ekofisk Bravo Platform

Phillips Petroleum's Ekofisk B platform experienced an 8-day oil and gas blowout in 1977 during a production well workover.

202,381 barrels

3. Funiwa No. 5 Well

Oil from the 1980 Funiwa 5 blowout polluted the Niger Delta for 2 weeks, followed by fire and the eventual bridging of the well.

200,000 barrels

4. Hasbah Platform Well 6

Drilled in 1980 by the Ron Tappmeyer jack-up, exploratory well No. 6 blew out in the Persian Gulf for 8 days and cost the lives of 19 men.

100,000 barrels

5. Union Oil Platform Alpha Well A-21

The 1969 Union Oil Platform A blowout lasted 11 days but continued leaking oil into the Santa Barbara Channel for months afterwards.

80,000 barrels

Most Expensive Accidents



Incident

Cost (2002 US\$)

1. Piper Alpha

\$1,270,000,000

Occidental's Piper Alpha platform was destroyed by explosion and fire in 1988. 167 workers were killed in the blaze.



2. Petrobras P36

\$515,000,000

In 2001, an explosion destabilised the P36 production rig in the Campos Basin, Brazil, eventually causing it to sink.



3. Enchova Central

\$461,000,000

Petrobras' Enchova PCE-1 Platform suffered twice with blowouts and fire in both 1984 and 1988, ending with the loss of the platform in 1988.



4. Sleipner A

\$365,000,000

A design error resulted in the structural failure in 1991 of the gravity base unit of the original Sleipner A platform.

5. Mississippi Canyon 311 A (Bourbon)

\$274,000,000

In 1987, the Mississippi Canyon 311 A Bourbon platform in the Gulf of Mexico was tilted to one side by an extensive underground blowout.



6. Mighty Servant 2

\$220,000,000

The Mighty Servant 2 struck a rock and sank off Indonesia whilst carrying platform modules in 1999.



7. Mumbai (Bombay) High North

\$195,000,000 (2005)

A support vessel collided with Mumbai High North in 2005, rupturing a riser and causing a major fire which destroyed the platform.



8. Steelhead Platform

\$171,000,000

A blowout in 1987 led to six months of trouble for the Steelhead Platform, resulting in fire and extensive platform damage.

9. Name not known

\$122,000,000

1993: Explosion and fire destroyed a platform control room and damaged adjacent platforms on Lake Maracaibo, Venezuela, with eleven fatalities.



10. Petronius A

\$116,000,000

In 1998, a crane load line broke while lifting the south topside module of the Petronius platform, dropping the module into the Gulf of Mexico.



Collapse



Incident

Alexander L. Kielland

In 1980, the semi-submersible accommodation rig Alexander L. Kielland capsized during a storm after a leg support brace failed.

Fatalities

123



Al Mariyah

Whilst skidding the rig cantilever, the jack-up Al Mariyah collapsed and lost its derrick onto the platform below.

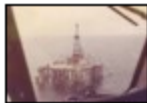
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Maersk Victory

A punch-through caused extensive damage to the Maersk Victory while working in Australian waters in 1996.

0



Ocean Prince

The UK-built semi-sub Ocean Prince, finder of the first UK offshore oil, broke up off England's east coast during a storm in 1967.

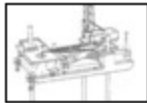
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Parker 14-J Drilling Barge

Failure of the jacking mechanism caused the Parker rig to collapse in 2003.

0



Ranger I

After being jacked up on location in 1979, the rig Ranger I collapsed due to fatigue in the stern leg.

8



Sea Gem

One of the first drilling rigs in the North Sea, the Sea Gem collapsed in 1965 as a result of metal fatigue.

13

Transocean 3

A rare self-elevating semi-submersible, the Transocean III capsized and sank East of Orkney after a jackable leg broke away in 1974.

0

Lost at Sea: Sunk Rigs

Bad weather, metal fatigue, loss of towline, human error and equipment failure are all common factors leading to the loss of rigs at sea when en-route to a new location. At least 30 jack-ups alone have been lost while on tow. Listed below is a selection of rigs that have sunk.



Jack-ups Lost in Transit

Bohai 2

In 1979, the jack-up Bohai 2 capsized and sank in a storm while on tow off the coast of China.

Fatalities

72



Interocean II

After a dramatic crew rescue in 1989, the Interocean II sank in a North Sea storm after towline failure.

0



Key Biscayne

The Key Biscayne capsized and sank off Australia's west coast in 1983 after flooding and towline failure.

0



Ocean Express

Another casualty of towline failure, the Ocean Express sank in 1976 during a storm in Gulf of Mexico.

13



Ocean Master II

The Ocean Master II sank off West Africa in 1977 as a result of structural problems and bad weather.

0



Mr Bice

Mr Bice sank in 1998 in the Gulf of Mexico after structural failure and flooding.

-



Rowan Gorilla I

The Rowan Gorilla I was crossing the North Atlantic in 1988 when it capsized and sank after structural failure caused by bad weather.

0



West Gamma

A storm in 1990 caused structural failure and flooding to the West Gamma, resulting in its sinking after towline loss.

0