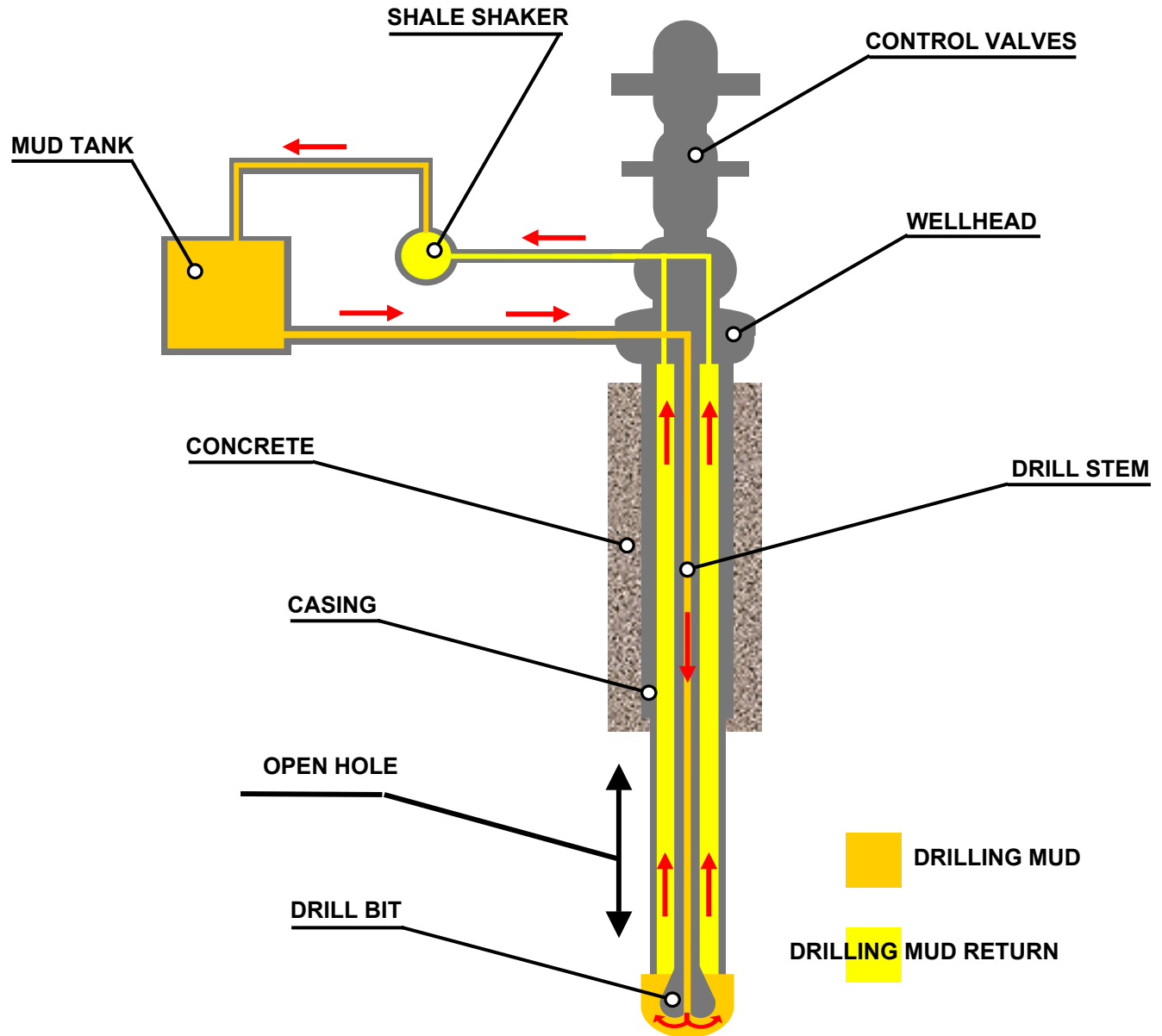


The background features a complex, repeating geometric pattern in shades of purple and blue, characteristic of Islamic art. In the lower portion, there are dark silhouettes of mosque domes and minarets against a lighter blue background.

Control of Well or Operators Extra Expense Insurance

Paddy Miller
Aon Limited, Energy

Diagram of a Well & Equipment Used



Topics Covered

- ❁ What is a well out of Control ?
- ❁ When is a well under control ?
- ❁ Why purchase insurance ?
- ❁ Who buys this insurance ?
- ❁ Loss History
- ❁ Basic Cover
- ❁ Additional Cover & Exclusions
- ❁ Risk Improvement Methods
- ❁ Onshore Control of Well Issues
- ❁ Rating
- ❁ Conclusions

Technically What Is A Well Out Of Control?

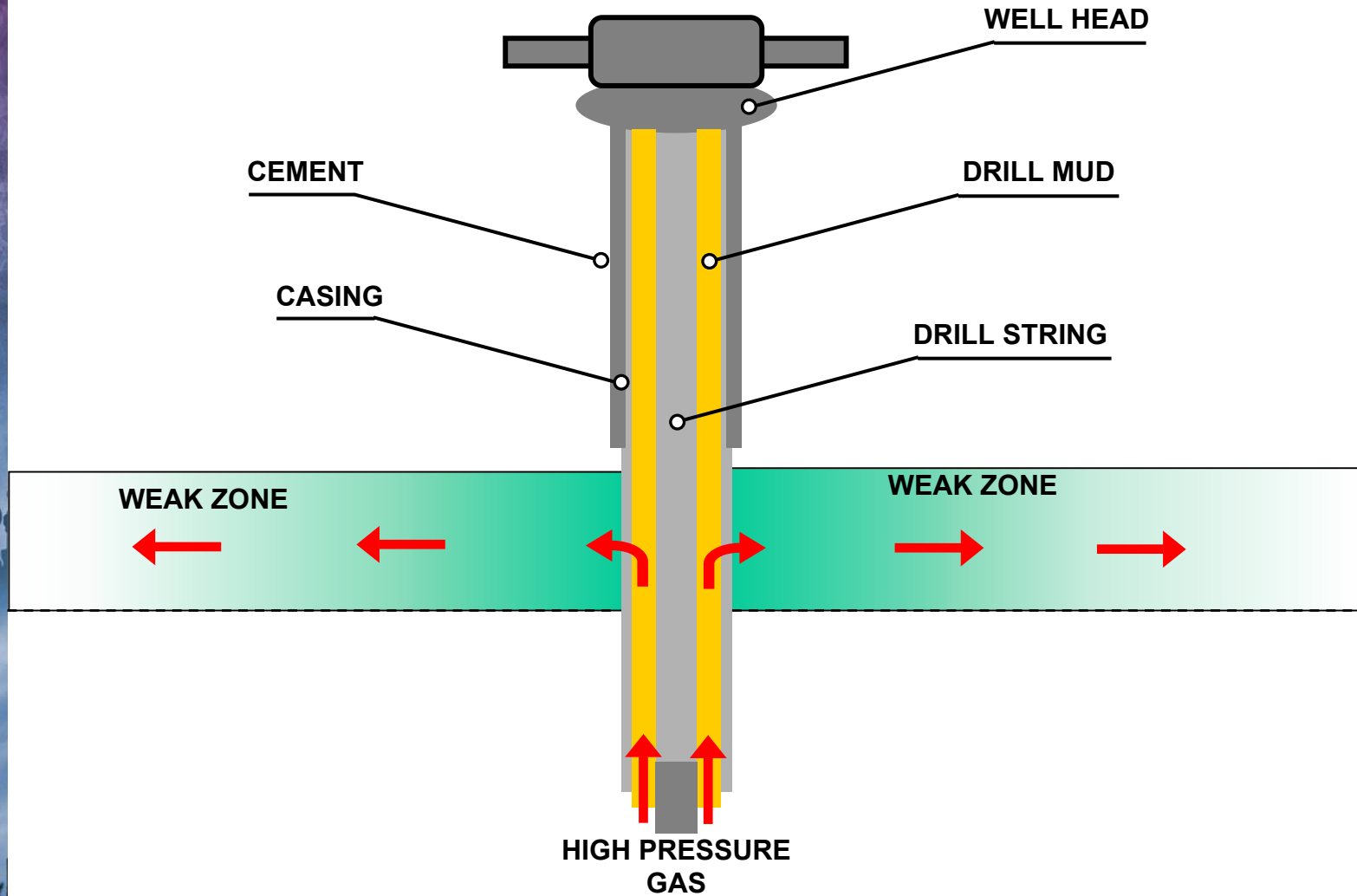
- ❁ **Above ground blow out** - uncontrollable flow into the atmosphere from the well
- ❁ **Underground blow out** - flow into another formation
- ❁ **Kick** - flow into the well, drilling fluid pressure unable to stop flow of oil /gas / water - can lead to blowout

- ❁ **Main Causes Of Well Control Problems:**
 - Loss of hydrostatic pressure
 - Loss of circulation
 - Human error
 - Equipment failure

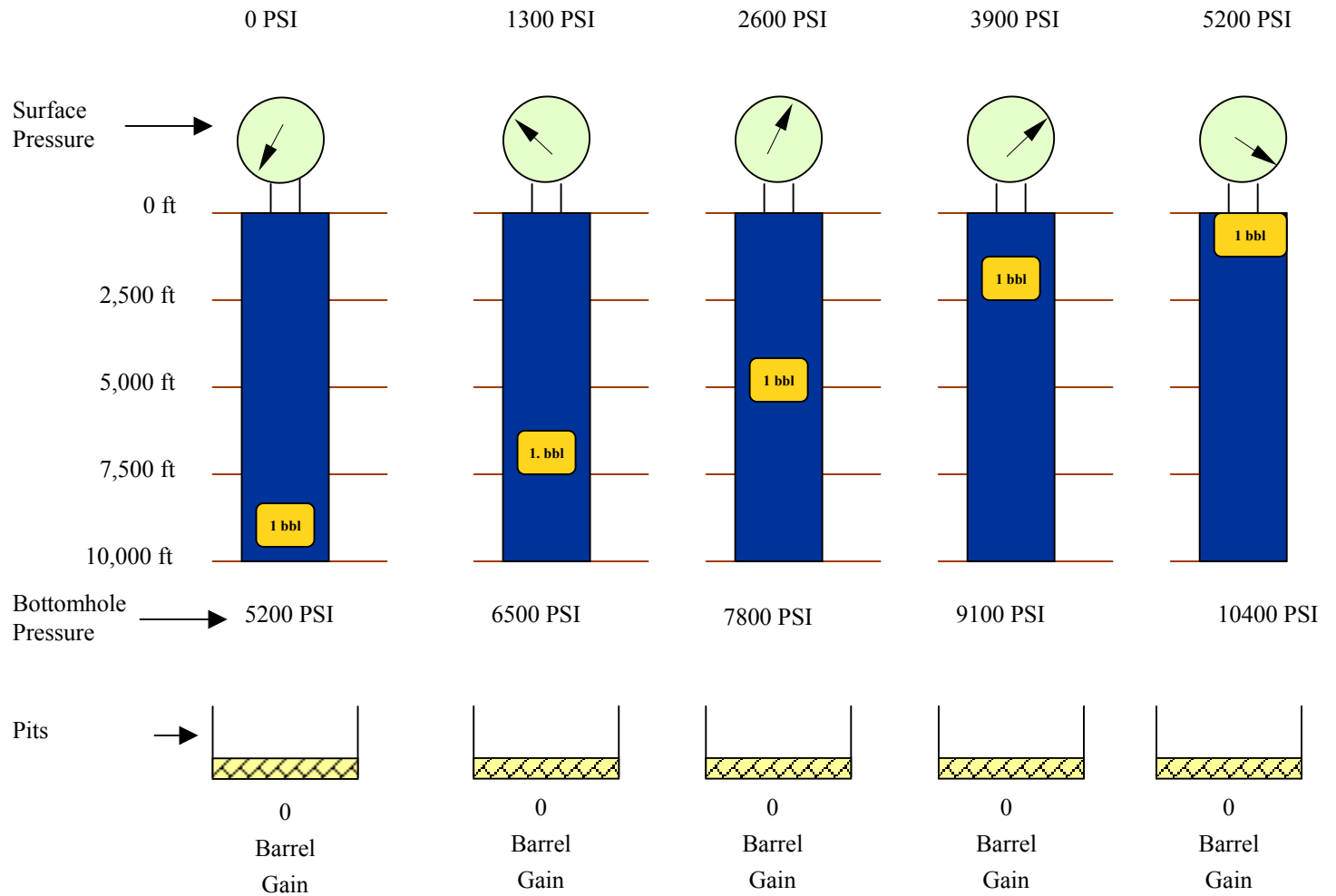
Insurance Definition of Well Out of Control

- ❁ When there is an unintended flow from the well of:
 - oil
 - gas
 - drilling fluid or
 - water - above the ground or sea floor
- ❁ Which cannot be stopped promptly by:
 - equipment on site (i.e. blowout preventor)
 - increasing the weight of drilling fluid or
 - diverting safely into production.
- ❁ Which is declared to be out of control by relevant authorities

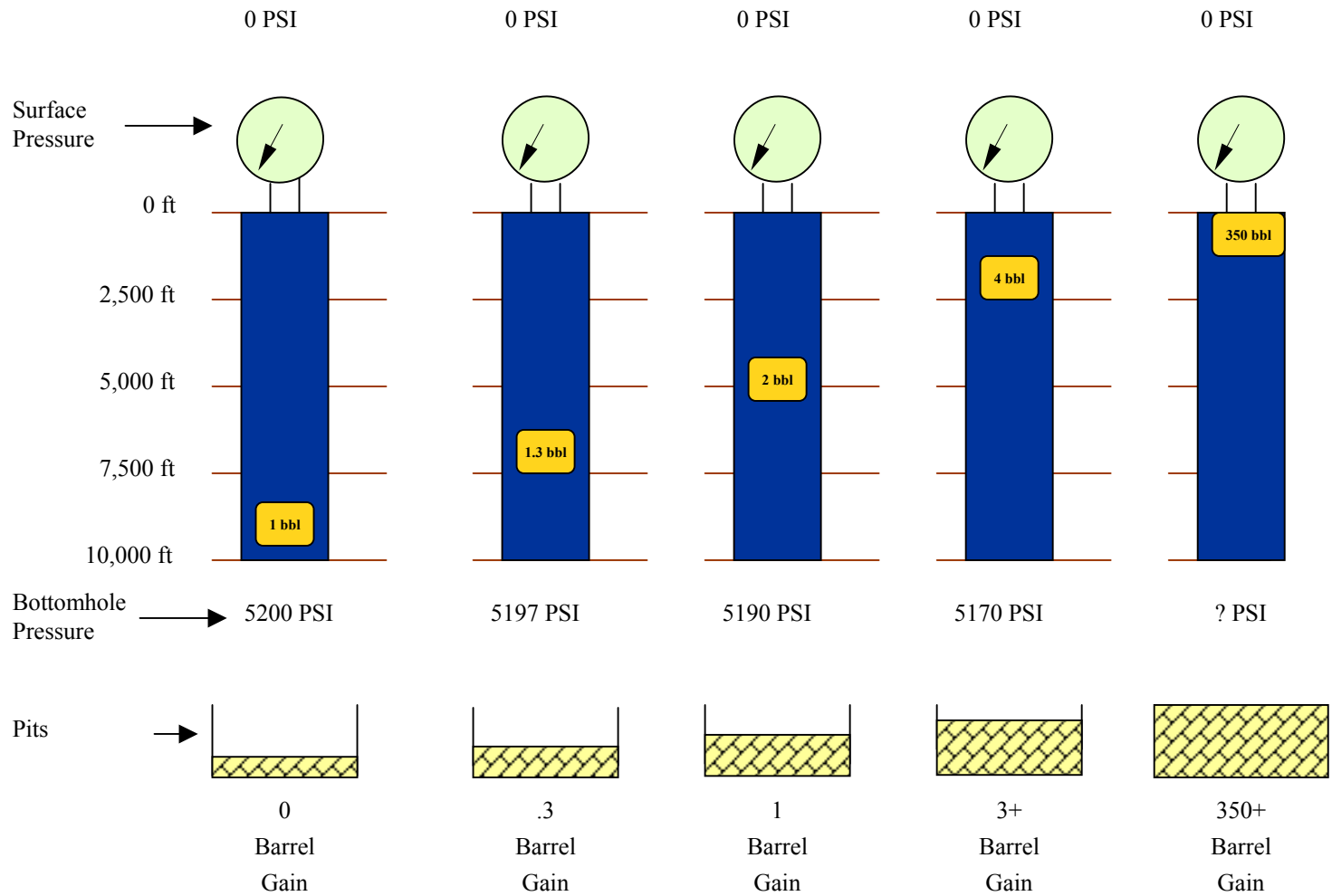
Underground Blowout



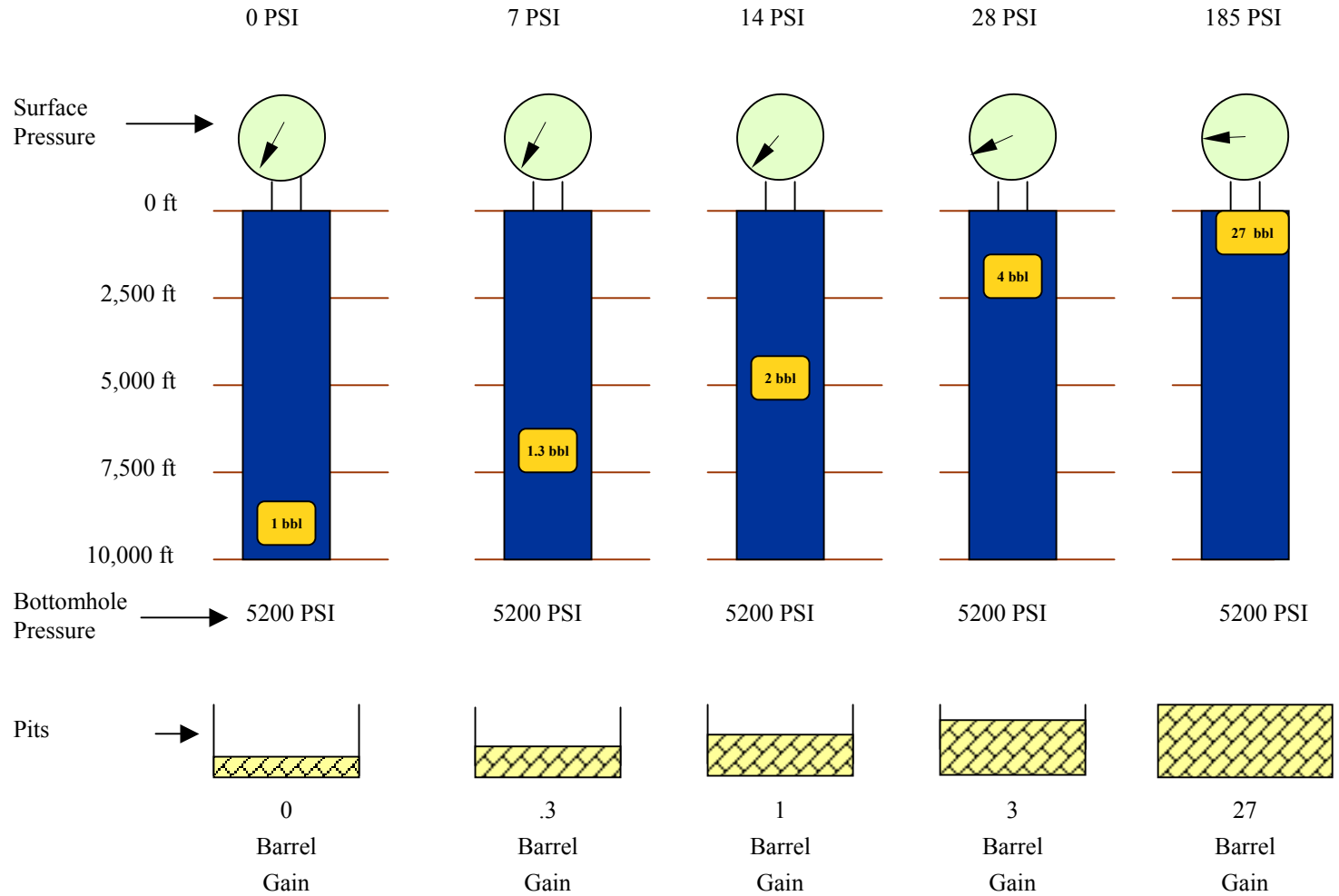
No Gas Expansion



Uncontrolled Expansion



Controlled Expansion



Insurance Definition of Well Under Control

A well(s) is under control when:

- ❁ The **flow stops**, or can be safely stopped **or**
- ❁ Drilling, servicing, or work over can be resumed
- ❁ Returned to same status as before the occurrence
- ❁ The flow can be safely diverted into production
- ❁ When the authorities deem the well to be under control

Why purchase control of well insurance ?

- ❁ Protect profits - Balance sheet protection
- ❁ Contractual requirement
- ❁ International Loan requirement
- ❁ Legal requirement
- ❁ Environmental protection
- ❁ Avoid negative publicity

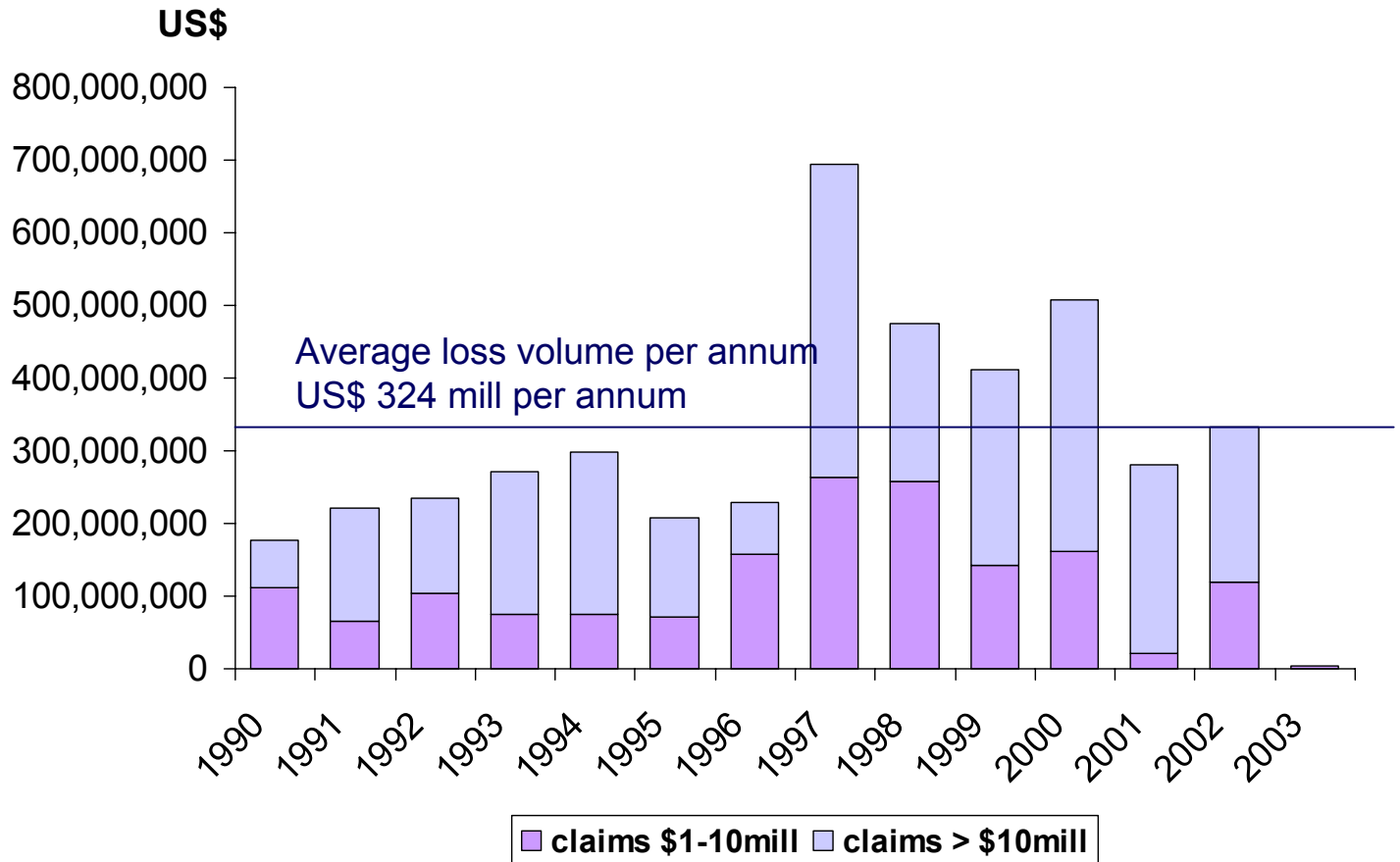
Who Buys The Coverage ?

- ❁ Oil lease operators and non-operators
- ❁ Drilling contractors
- ❁ Turnkey drilling contractors

- ❁ Responsibilities are defined by type of drilling contract:
 - Day work contract - paid by the day
 - Footage contract - paid by well depths achieved
 - Turnkey contract - paid for the project

World-wide Well Control Losses 1990-2002

(excess US\$ 1 million)



Large Control of Well Losses 2001 / 2

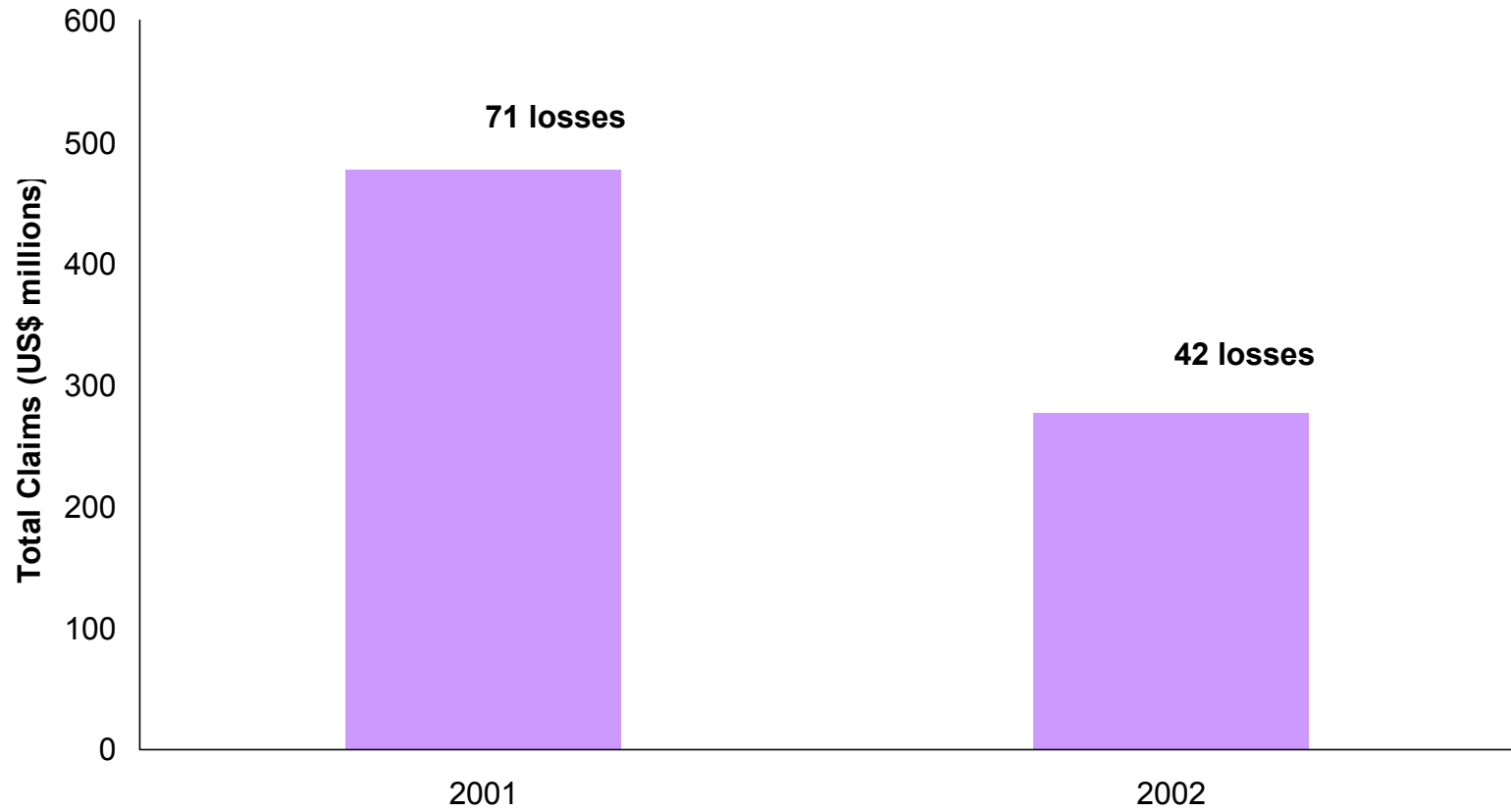
Year	Type	Cause	Location	Land / Offshore	Total Actual US\$
2001	Rig	Blowout	USA	Offshore	92,650,000
2001	Platform	Blowout	USA	Offshore	30,000,000
2001	Rig	Blowout	USA	Offshore	24,945,160
2001	Well	Blowout	USA	Land	18,000,000
2001	Rig	Blowout	USA	Land	17,464,000
2001	Well	Blowout	USA	Offshore	13,000,000
2001	Well	Blowout	Congo	Offshore	11,358,134
2001	Well	Blowout	USA	Offshore	11,300,000
2001	Well	Blowout	USA	Offshore	11,000,000
2001	Well	Blowout	Oman	Land	10,000,000
2001	Well	Blowout	Venezuela	Land	10,000,000
2001	Well	Blowout	Venezuela	Land	10,000,000
—					
2002	Rig	Blowout	Indonesia	Offshore	51,000,000
2002	Rig	Leg punch through	Saudi Arabia	Offshore	36,000,000
2002	Well	Blowout	Canada	Offshore	30,545,000
2002	Well	Blowout	USA	Offshore	24,100,000
2002	Rig	Blowout	USA	Offshore	18,000,000
2002	Rig	Blowout	Indonesia	Land	17,500,000
2002	Well	Heavy weather	India	Offshore	16,000,000
2002	Platform	Subsidence/landslide	USA	Offshore	10,000,000
2002	Well	Blowout	Mexico	Offshore	10,000,000

Onshore OEE Claims Only

(xs of US\$ 1 Million) @ 24/02/03

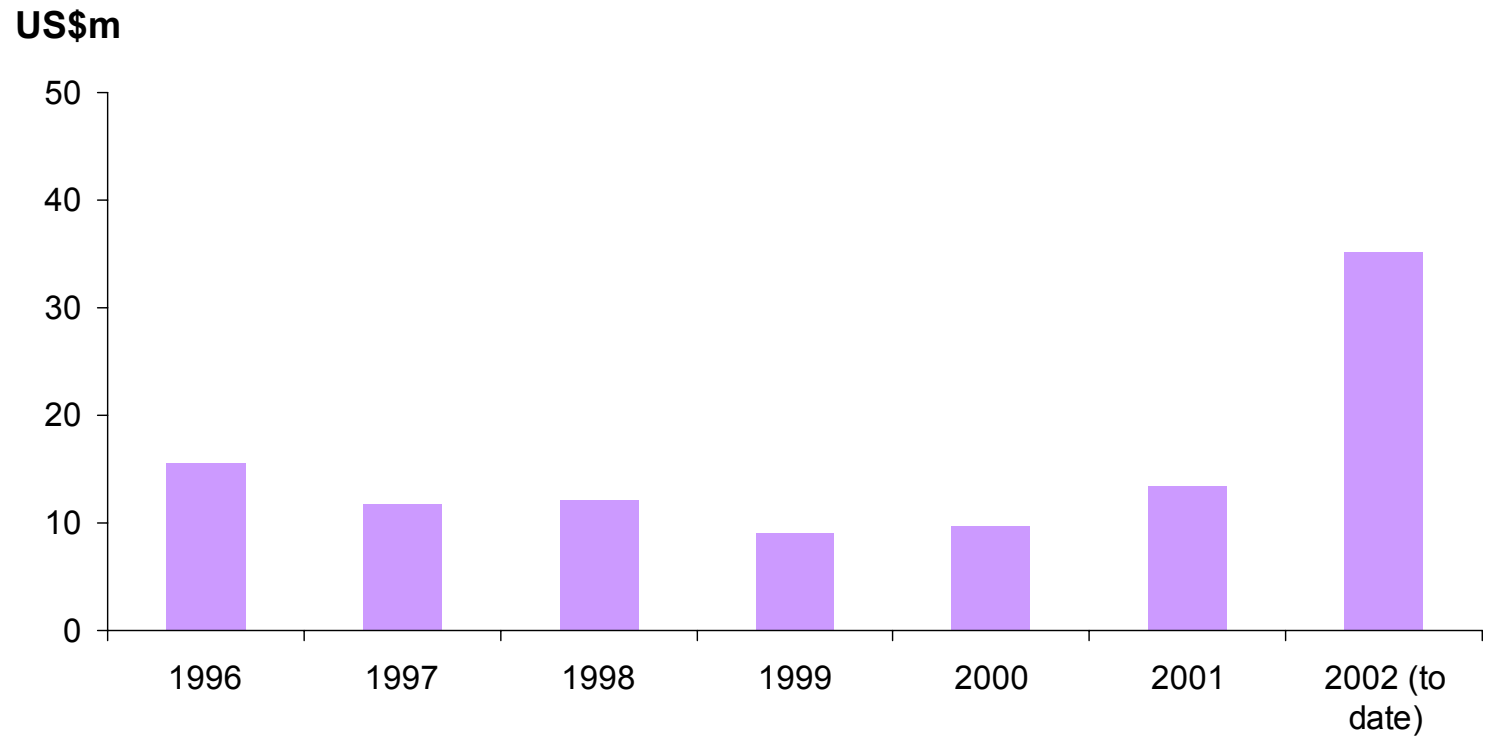
	Incidents	Totals per year	Average Claims per Year
1990	17	57,691,744	3,393,632
1991	22	134,530,585	6,115,027
1992	14	95,453,366	6,818,098
1993	7	23,775,455	3,396,494
1994	22	205,318,073	9,332,640
1995	13	110,829,714	8,525,363
1996	22	86,807,219	3,945,783
1997	49	285,455,241	5,825,617
1998	48	255,192,535	5,316,511
1999	22	136,572,513	6,207,842
2000	38	156,029,677	4,106,044
2001	40	192,950,528	4,823,763
2002	23	83,500,000	3,630,435
2003	1	2,450,000	2,450,000
TOTAL	338	1,826,556,651	5,404,014

Blowout Losses



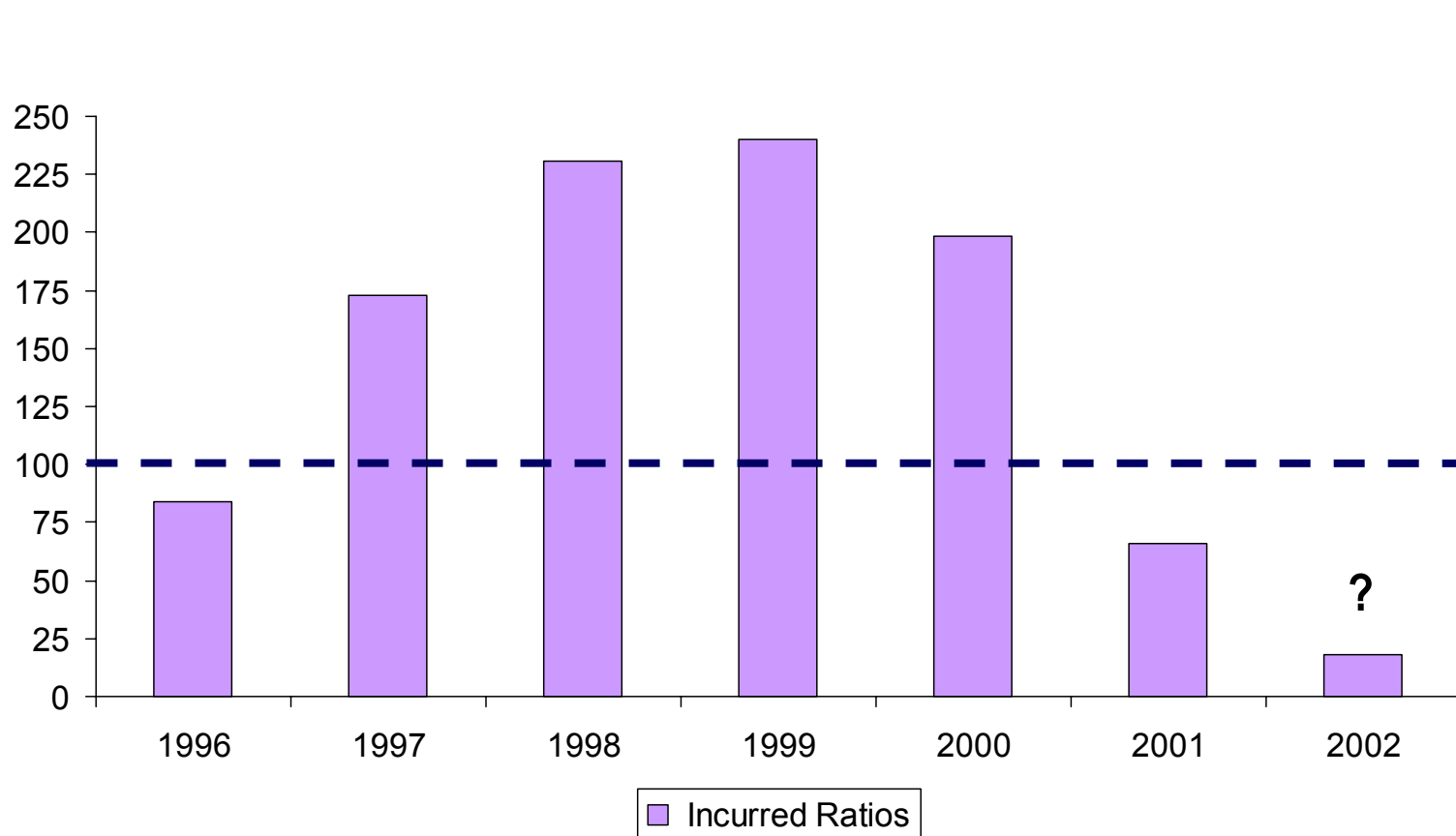
Lloyd's Control of Well premium income - by second quarter of each year

Source: LUA risk codes - settlement statistics, 2nd quarter, 2002



Lloyd's Control of Well Loss Ratios latest settlements 1996 - 2002

Source: LUA risk codes - settlement statistics, 4th quarter, 2002



Basic Cover

- ❁ Well Control is a not a Physical Damage Policy
- ❁ A Well control policy covers
 - (A) Control of well
 - (B) Redrilling and extra expense
 - (C) Seepage and pollution clean up
- ❁ Cover given for all wells or wells declared by the assured (wells not declared, not covered)
- ❁ What wells can be covered :
 - Drilling Producing Work-overs or Shut-in
- ❁ Cover for (B) and (C) given, only if a recoverable claim under (A)
- ❁ A Combined Single Limit for (A), (B) and (C) = the Limit Insured

Seepage and Pollution

- ❁ This policy only covers pollution following a well out of control.
- ❁ Third Party Liability policy can be extended to give sudden and accidental pollution at the wellsite.
- ❁ Third Party Liability policy excludes pollution from blow out.
- ❁ Stand alone pollution policies are available.
- ❁ Certain areas of the world require specific minimum pollution limits be purchased.
- ❁ Oil Pollution Act
- ❁ OPOL
- ❁ Western Australia Department of Mines

Additional Cover for

- ❁ Underground Blowout
- ❁ Care, custody and control
- ❁ Deliberate well firing
- ❁ Evacuation expenses
- ❁ Extended redrill
- ❁ Making wells safe

Main Exclusions

- ❁ Wells being drilled before cover attaches
- ❁ Loss or damage to drilling / production equipment
- ❁ Delay or loss of reservoir pressure
- ❁ Fines and penalties
- ❁ Punitive damages
- ❁ Earthquake, war and terrorism

Risk Improvement Methods

- ❁ Reservoir knowledge - Correlation with existing wells
- ❁ High safety standards
- ❁ Constant monitoring of well pressures whilst producing
- ❁ Emergency training by drilling crews i.e. against blowouts
- ❁ Blowout contingency planning
 - access to control of well experts / equipment back -up
- ❁ Maintenance of equipment
- ❁ Use of independent well engineer

Onshore Control of Well Issues

❁ Limits purchased US\$3-30m - Deductible US\$250,000

❁ Greatest Dangers :

➤ re-entering old wells

casing failures

➤ high pressure gas

severe / frequent blowouts

➤ underground blowouts

very expensive

➤ oil spills

removal costs high

➤ inexperienced crew

human error

➤ remote drilling sites

equipment & experts

❁ Consequences : Down time / loss of life / property damage

Offshore Control of Well Issues

- ❁ Limit purchased US\$25-250m - Deductible US\$1,000,000
- ❁ Factors affecting offshore
 - Drilling Unit costs
 - Waterdepth/type of unit
 - Well depth
 - Location
 - Availability
 - Seabed conditions
 - Weather conditions
 - Logistical factors

Rating Factors

- ❁ Loss record
- ❁ Well location(s)
- ❁ Well type (drilling, producing, workover or shut-in)
- ❁ Well depth(s)
- ❁ Total gross footage (all wells)
- ❁ Limit of liability/deductibles
- ❁ Additional Cover

Insurance Rating depends on:

- ❁ Assureds' Own Loss Record - lower premium if less claims
- ❁ Known Loss Experience for the Area -
 - if difficult geology - higher rates
- ❁ Location - Onshore & Offshore - World split into 4 Areas
 - Onshore rates less than offshore - less expensive to control
- ❁ Well status - in descending order of risk and rating
 - drilling most dangerous - most expensive
 - work-overs next
 - producing next
 - shut -in wells least cost

Insurance Rating depends on:

❁ Well depth usually means

- deeper wells more pressure higher rates
- shallower wells less pressure lower rates

❁ Type of Cover Required

- basic lower rates
- more cover (Underground blowout etc) higher rates

❁ Limits

- higher limits higher rates
- lower limits lower rate

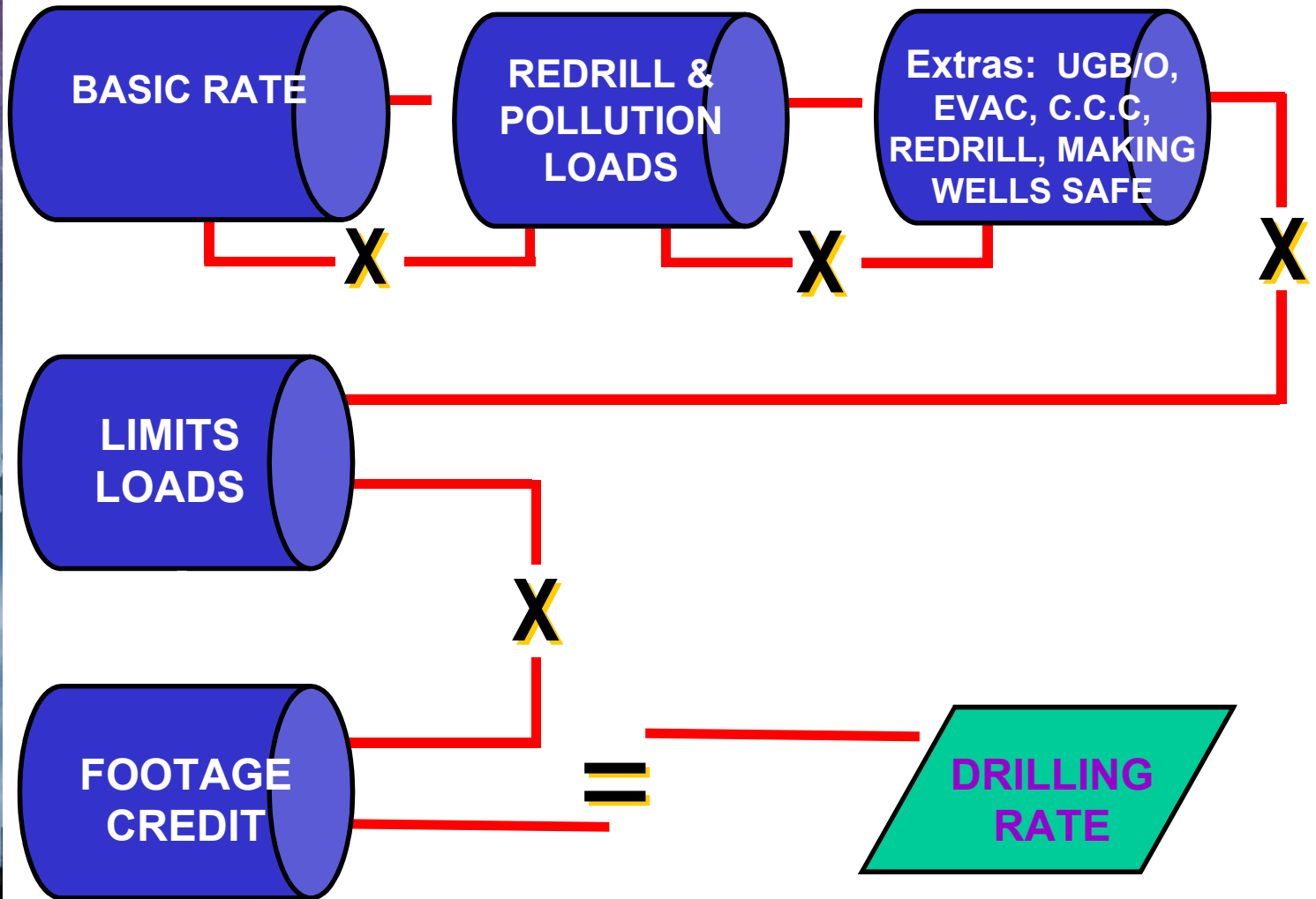
Deductibles

- higher retentions > lower rates
- lower retentions > higher rates

❁ Discounts (or footage credits)

- greater number of wells insured larger the discount

Rating Formula $a \times b \times c \times d \times e = \text{cost}$



Conclusions

- ❁ The cost of Control of Well Events are often underestimated
- ❁ Most operators buy control of well to help mitigate :
 - loss of production targets / project delay
 - supplier contract penalties
 - loss of life and equipment (Evacuation Expenses)
 - pollution
- ❁ Operators also insure because
 - banks making loans often insist on insurance cover
 - to avoid unnecessary risk in difficult geology
- ❁ Points to Remember
 - Only wells declared are insured
 - The Limit is a Combined Single Limit for all Coverages
 - therefore sufficient limit needs to be purchased