

THE LAST LEGS COMPLEX

General -

- A single complex containing a refinery & ethylene cracker.
- Located in a first world country.
- Built in 1980's, but built to 1970's standards.
- Control room not blast resistant.
- Some asbestos insulation in process units.



Refinery

- 212,000b/d crude oil capacity.
- PD = \$1,000M.
- BI = \$75M/y with 2 year IP.
- 2 crude distillation units, one
 - 50,000b/d and other 62,000b/d.
- Other units include FCC, Reformer and HF Alkylation.
- Provides naphtha feedstock for Last Legs ethylene cracker.

Ethylene Cracker

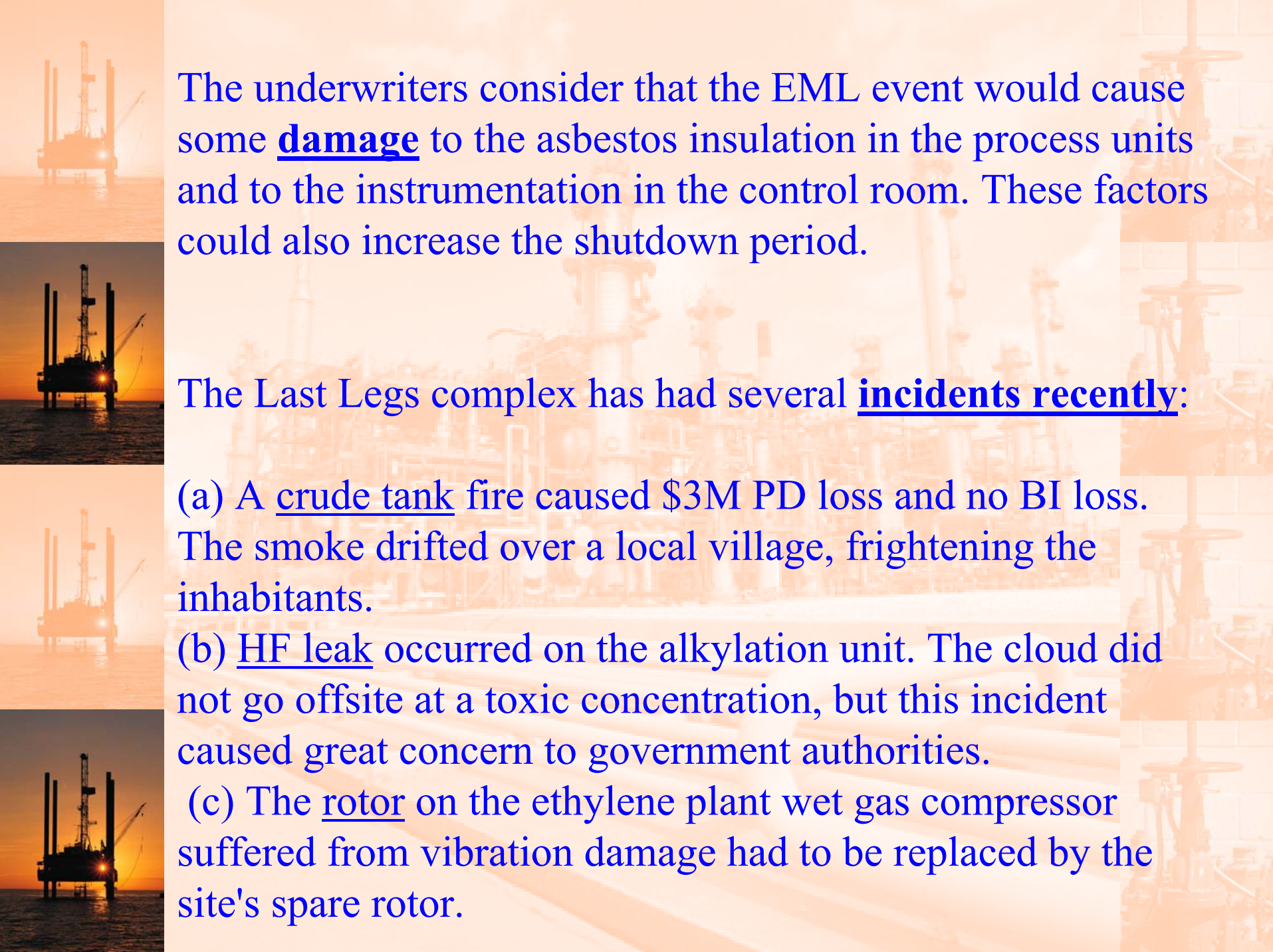
- 400,000t/y ethylene production.
- PD = \$600M
- BI = \$50M/y with 2 year IP.
- Relies 100% on Last Legs refinery for naphtha feedstock.
- 100% of ethylene product goes to a third party polymer plant.

Underwriting Information

The broker's EML is based on a VCE in the FCC unit.

The underwriter's EML is based on a VCE in the larger crude unit. Although this does not give as big a PD loss as the broker's scenario, it could damage the nearby Alkylation unit, which is currently a sensitive subject.

The underwriter considers that this will lead to a larger BI loss because the government authorities could impose a site shutdown of 6 months, with the result that the combined PD+BI EML is bigger than the broker's figure.



The underwriters consider that the EML event would cause some **damage** to the asbestos insulation in the process units and to the instrumentation in the control room. These factors could also increase the shutdown period.

The Last Legs complex has had several **incidents recently**:

- (a) A **crude tank** fire caused \$3M PD loss and no BI loss. The smoke drifted over a local village, frightening the inhabitants.
- (b) **HF leak** occurred on the alkylation unit. The cloud did not go offsite at a toxic concentration, but this incident caused great concern to government authorities.
- (c) The **rotor** on the ethylene plant wet gas compressor suffered from vibration damage had to be replaced by the site's spare rotor.

B.I. Margins

The policy BI sums insured equate to refinery margin = US\$1/bbl and ethylene cracker margin = \$125/tonne. These are based on last year's figures.

The underwriter agrees with the margins for the refinery, but considers that the ethylene plant margins should be 50% higher for this year and another 25% higher for the following year.

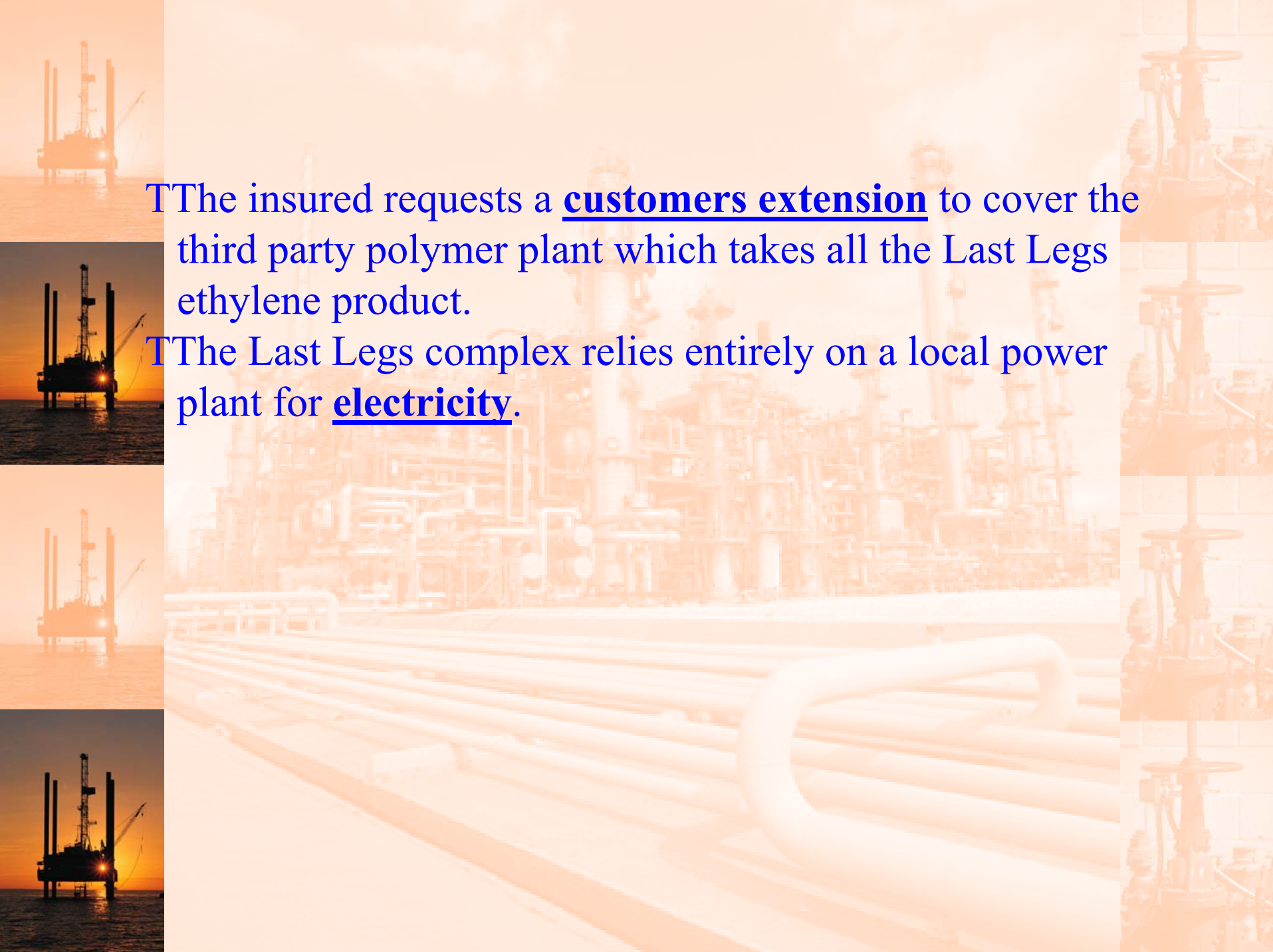
Last Legs say they cannot afford to purchase another spare rotor for the ethylene plant wet gas compressor. The underwriter argues that, because of the anticipated increased profits from the ethylene plant, the insured can afford a spare rotor.



The underwriter's suspicions on BI values are reinforced when Last Legs admit that they have recently postponed a planned **turnaround** for 12 months.

The Last Legs **jetty** is presently used to only export refined products. The broker reckons that this could be converted to import naphtha (to keep the ethylene plant running) in 1 month.

The underwriter reckons it would take 2 months because the Last Legs jetty is not sufficient on its own, so a neighbouring jetty would have to be converted to achieve the necessary throughput.

The background of the slide is a collage of industrial and offshore oil and gas scenes. It features a large, semi-transparent image of an industrial facility with numerous pipes and structures. On the left side, there are four smaller, vertically stacked images of offshore oil rigs at sea. On the right side, there are several smaller images showing close-up views of industrial machinery and pipes. The overall color scheme is a warm, orange-tinted gradient.

The insured requests a customers extension to cover the third party polymer plant which takes all the Last Legs ethylene product.

The Last Legs complex relies entirely on a local power plant for electricity.

Estimated Maximum Loss

Broker's Figures -

PD = \$300M (VCE in the FCC unit).

BI = \$117M(18 mth shutdown of refinery,
1 mth shutdown of ethylene).

Total = \$417M

Estimated Maximum Loss

Underwriter's Figures -

PD = \$280M (VCE in CDU, not as big as broker's loss, but damages Alky unit).

BI = \$175M (24 mth shutdown of refinery, 6 mth shutdown of ethylene).

Total = \$455M

A Simulated Broking Exercise

- **The Last Legs Refining and Petrochemical Co**
- **Broked by - Dodgy Insurance Brokers Inc**
- **Broked to – The Claimless Ins Co Ltd**

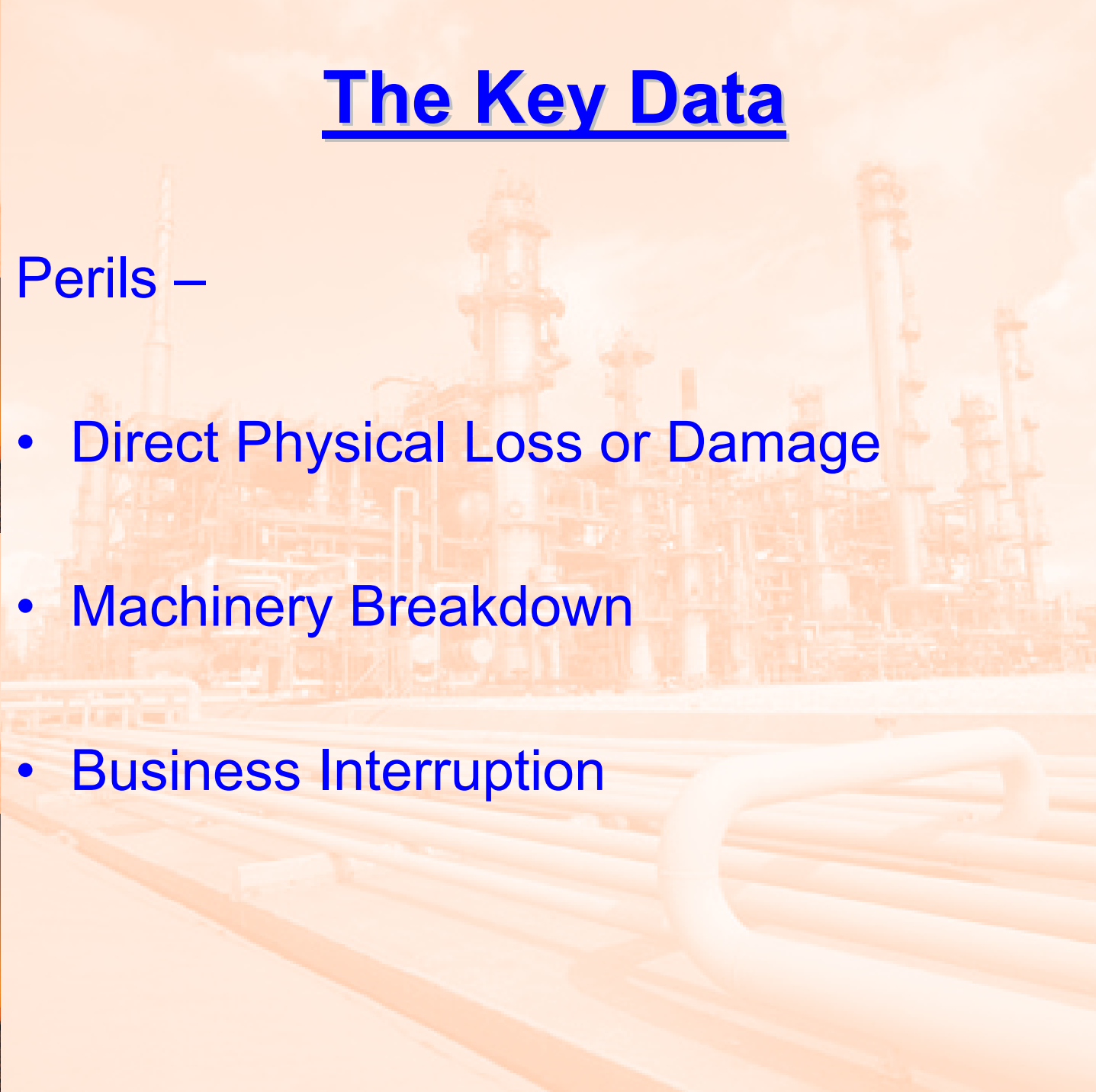
Disclaimer

- Any references to Alcohol, Long lunches, rate reductions, reduced BI deductibles or softening market conditions are purely fictitious and are for presentaiton purposes only

The Key Data

Perils –

- Direct Physical Loss or Damage
- Machinery Breakdown
- Business Interruption



The Key Data

Interest –

A) Property of Assured comprising

- Refinery
- Ethylene Plant
- Utilities
- Loading/Unloading Facilities including Jetty

B) Loss of Gross Profit including contingent interruption

The Key Data

Sums Insured -

A) Assets

Refinery	USD 1,000,000,000
Ethylene	USD 600,000,000
Stocks	<u>USD 275,000,000</u>
	USD 1,875,000,000

B) Loss of Gross Profit

Refinery	USD 150,000,000
Ethylene	<u>USD 100,000,000</u>
	USD 250,000,000

The Key Data

Location : Europe

Existing Deductibles

A) USD 1,000,000 any one occurrence

B) 60 days any one occurrence

The Key Data

Property Conditions -	Limit
• Fire Fighting Expenses	USD 2,500,000
• Minor Works	USD10,000,000
• Reinstatement Value Basis	
• 10% Margin Clause	
• Removal of Debris	USD10,000,000
• Expediting Expenses	USD10,000,000
• Testing & Commissioning Clause	
• Seepage and Pollution (based NMA1999B)	

The Key Data

BI Conditions -

- Power and Utilities Extension
- Denial of Access
- Customers Extension
- Automatic Increase 133.3%
- Port Blockage

The Key Data

General Conditions -

- Claims Control
- Cyber Clause
- Notice of Cancellation 90 days
- War and Terrorism Exclusion NMA2919
- 72 hours clause

Proposed Rating

Physical Damage –

Refinery	0.245%
Ethylene	0.298%
Stock	0.15%

Business Interruption –

Refinery	0.425%
Ethylene	0.5919%

Loss History since 2002

A) Vibration/Damage to wet gas compressor

- spare rotor used
- no claim paid

B) Toxic gas release (Hydrofluoric Acid) affecting local population

C) Crude tank farm fire

- paid PD USD 1.8M
- o/s PD USD 1.2M

No business interruption loss

Other Information

External supplier of power (100%)

- Alliance Power Company

B) Sole recipient of ethylene

- Poorest Polyethylene Ltd

C) Ethylene Plant Feedstock is Naphtha supplied totally by the refinery

On it's Last Legs !

