

# *Risk Management at Pemex*

*November 4-5, 2002*

*Mexico City*



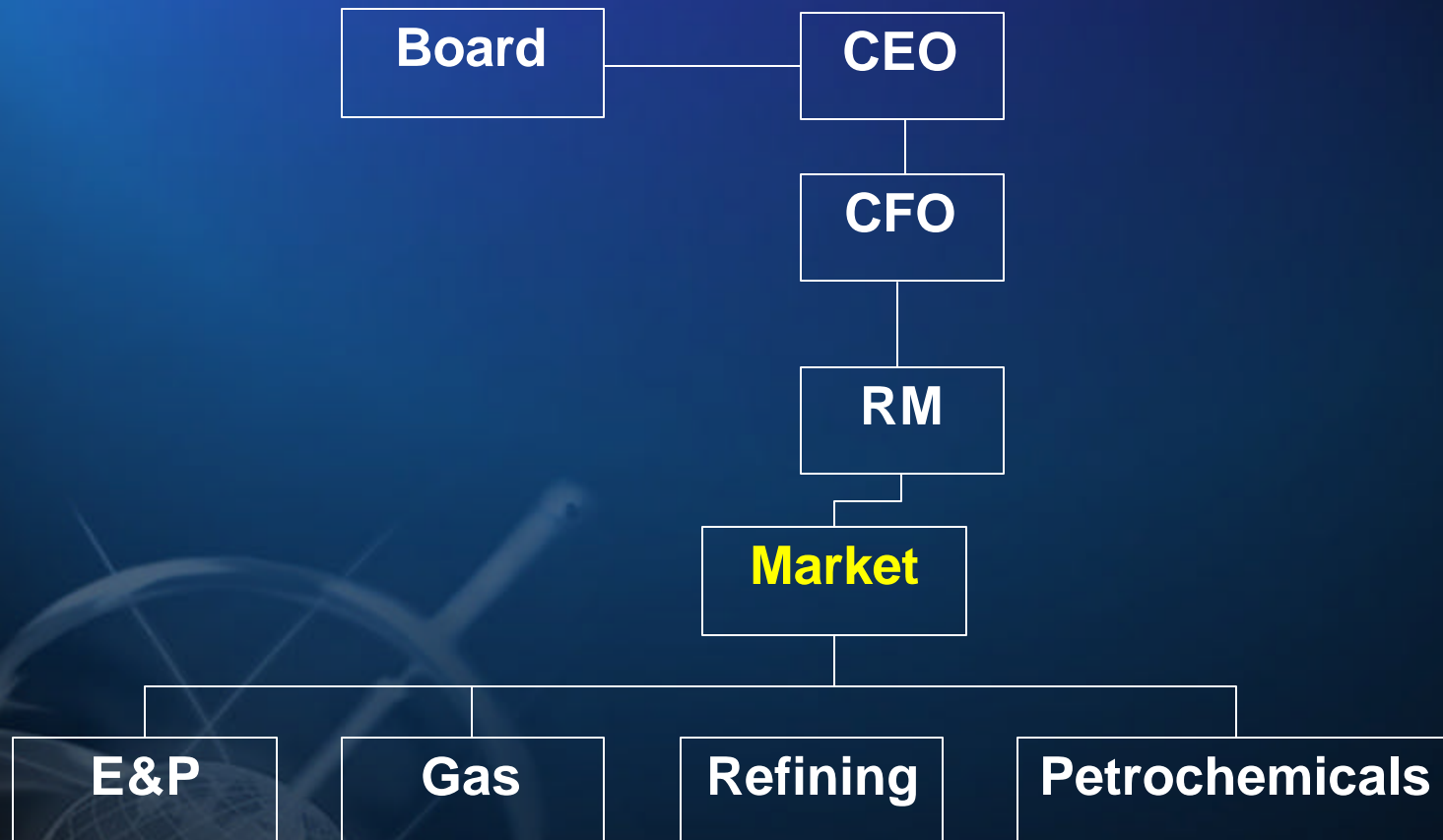
# Agenda

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- Pemex Risk Management structure
  
- Where do we want to go
  
- Where are we now
  - ◆ Market Risk
  - ◆ Credit Risk
  - ◆ Operational Risk
  - ◆ Reporting
  
- Next Steps



# Pemex risk management structure



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# Where do we want to go

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- **Developing and implementing a common risk language throughout the company**
- **Match the risk characteristics of our assets to the risk profile of key stakeholders**
  - ◆ Benchmarks (net cash flow, future investments)
- **Make investment (budgeting-capital allocation) decisions based not only on expected return, but also on risk (marginal contribution to overall risk)**
- **Evaluate the performance of business units on a risk-adjusted basis – consumption of economic capital**



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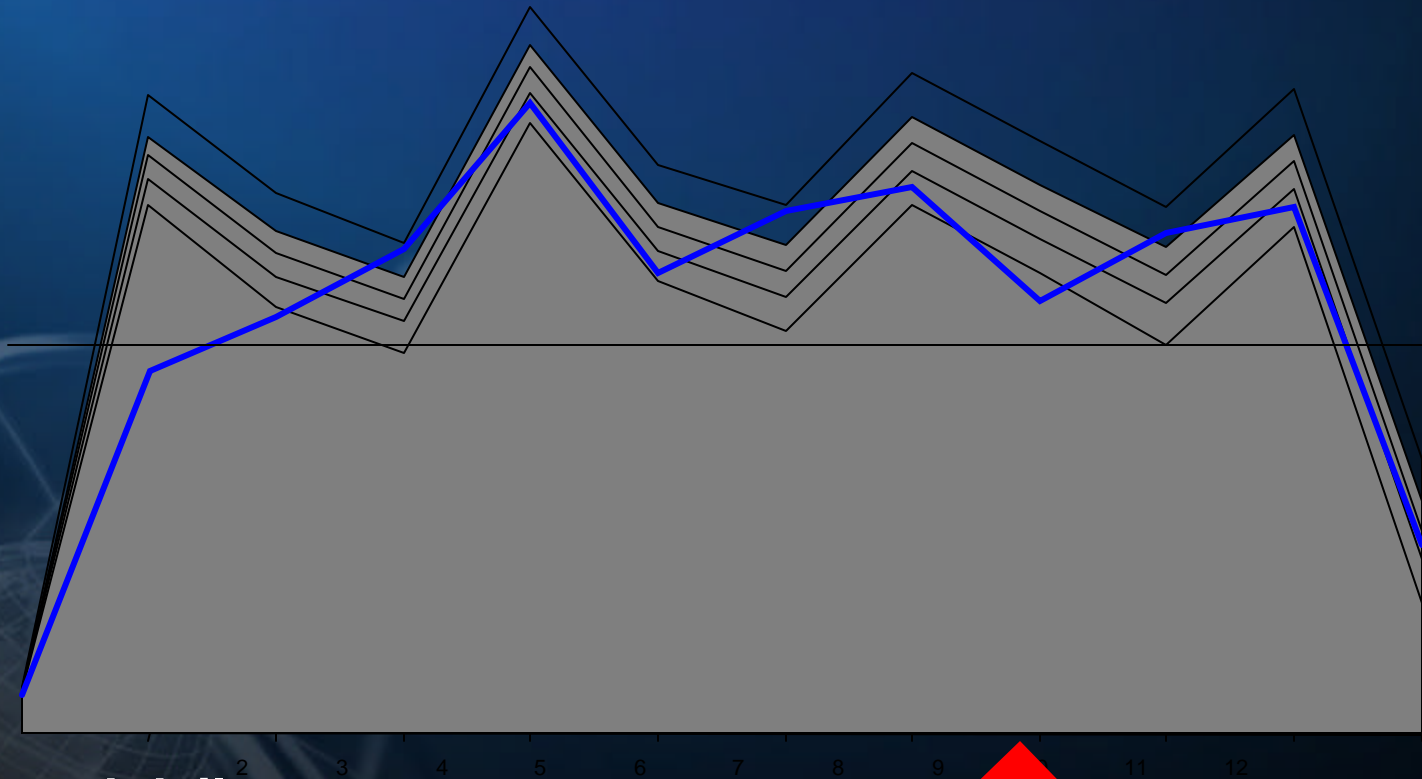


# Market Risk

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- Developed a Cash flow at risk model for the business units and the Group

Monthly EBIAT, budget vs confidence interval

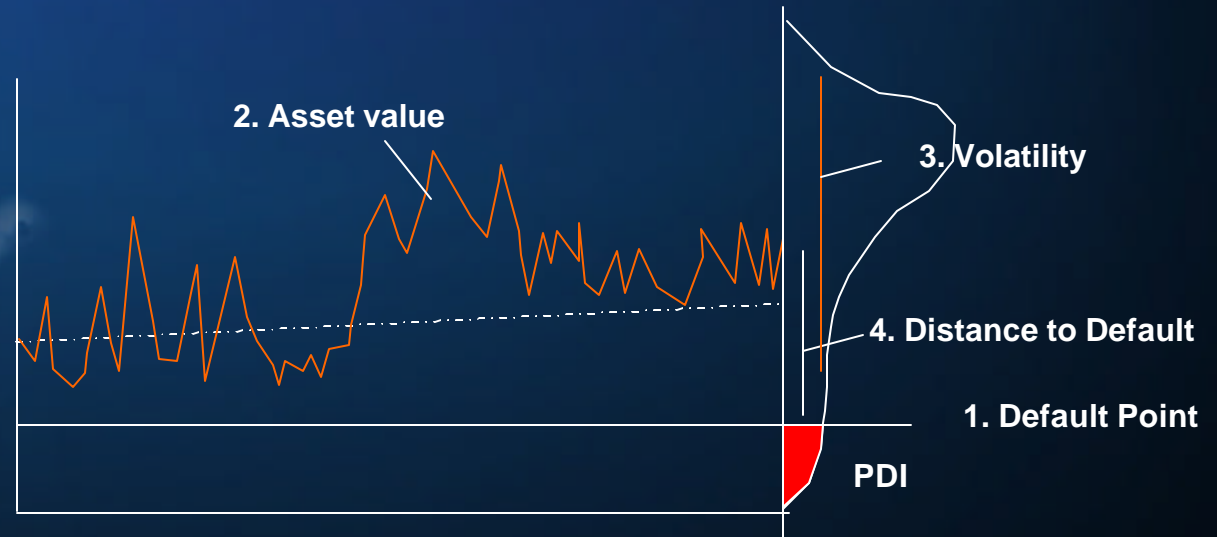


- Reported daily



# Credit Risk

- Developed an Internal Credit Risk model
- Implemented with some business units
- Reporting daily



- Next step: Guidelines for changes in credit quality

# Operational Risk

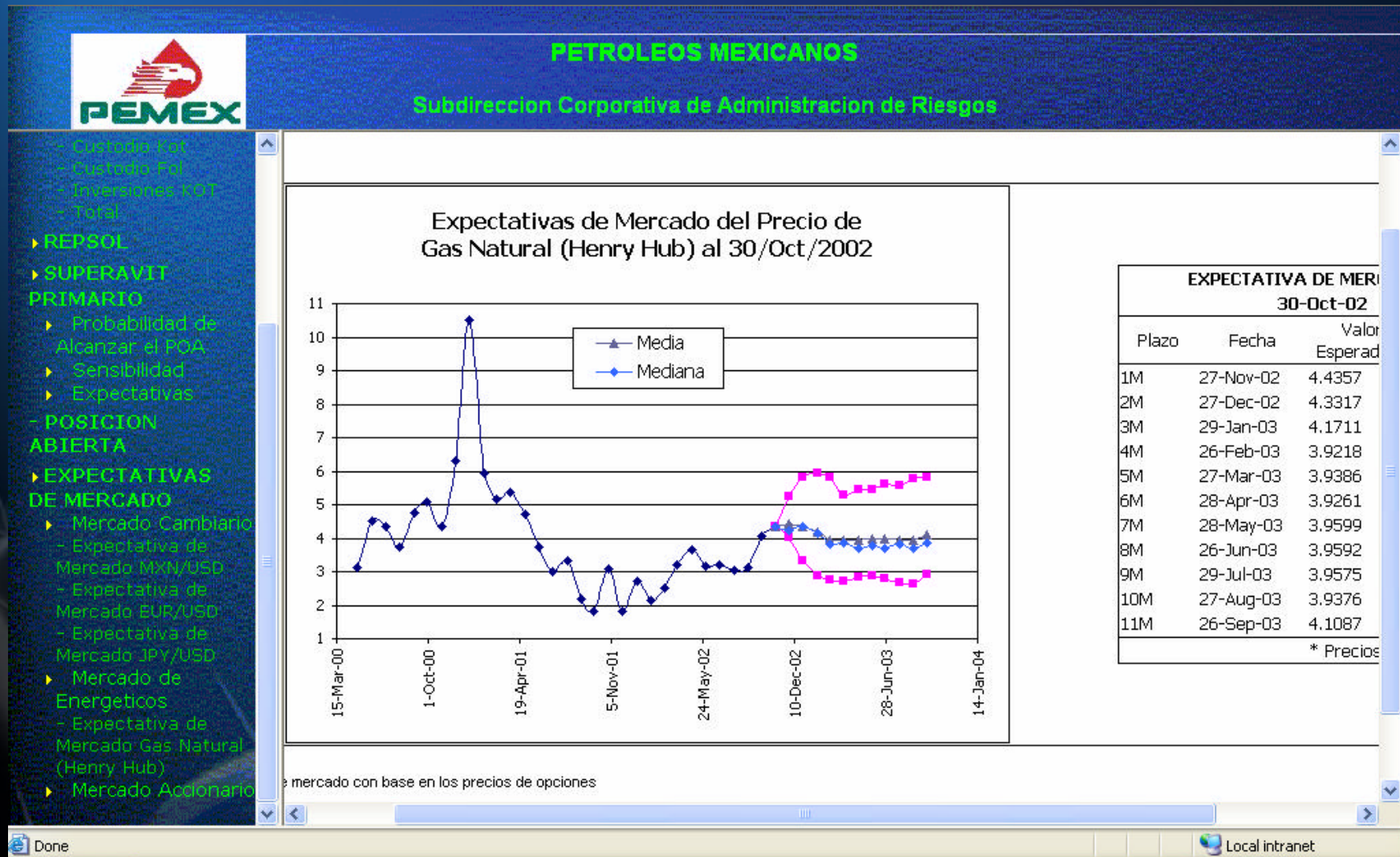
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- Extreme Value Theory applied to loss record
- Pricing mechanism for risk retention/transfer (Captive Company)
- Critical facilities and processes identified (HSE / Business Lines)
- Loss prevention and control program (HSE / Business Lines)



# Daily Risk Report

- Available in the Pemex intranet



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# Next Steps

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- Finish work in progress..
- Develop a common denominator for risk valuation
  - ◆ **The Global Covariance Matrix**
- Set a new framework for risk auditing and compliance (Internal Auditors)
- New challenges..



# Operational Risk

- Work in progress: Hurricane modelling / PD / BI

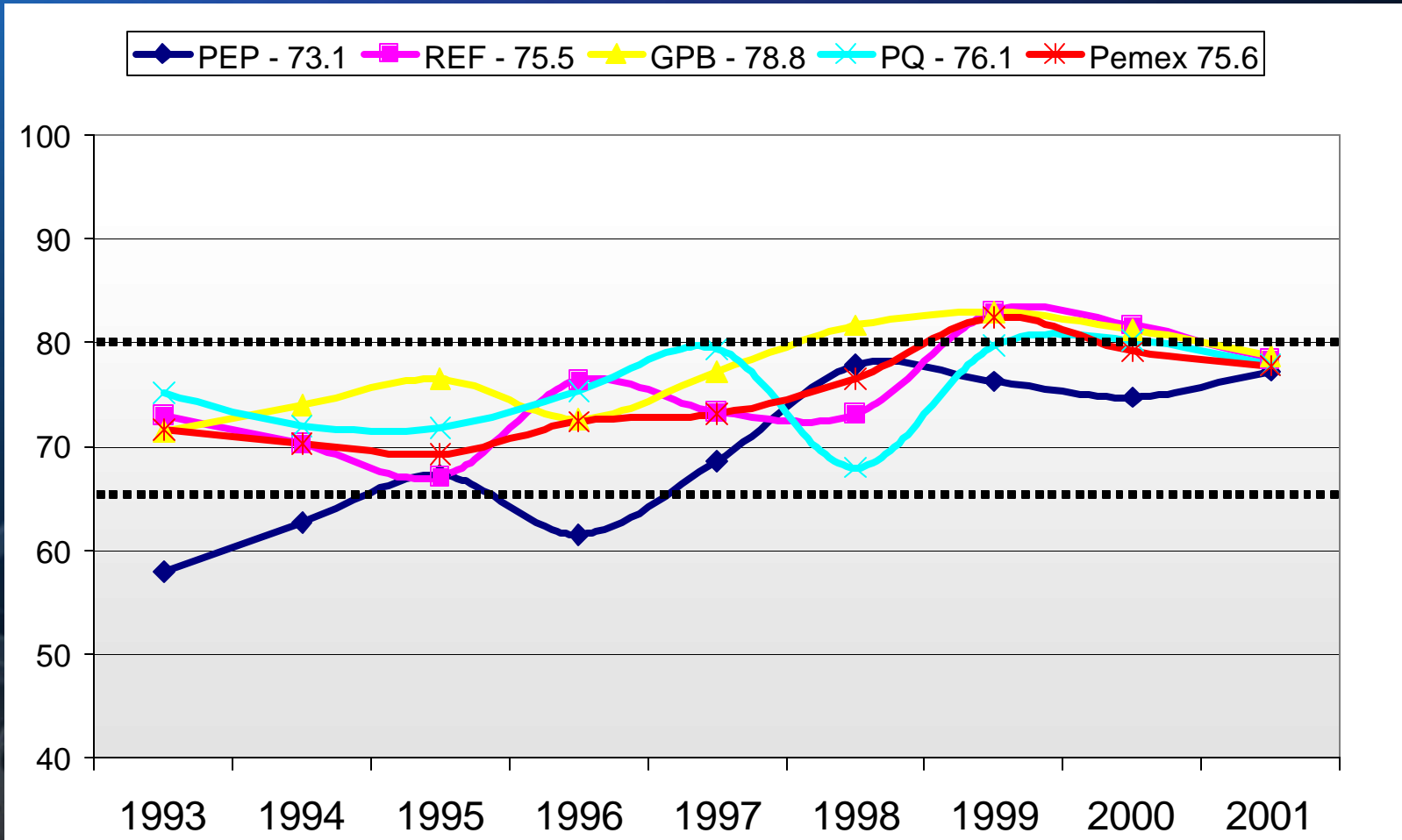


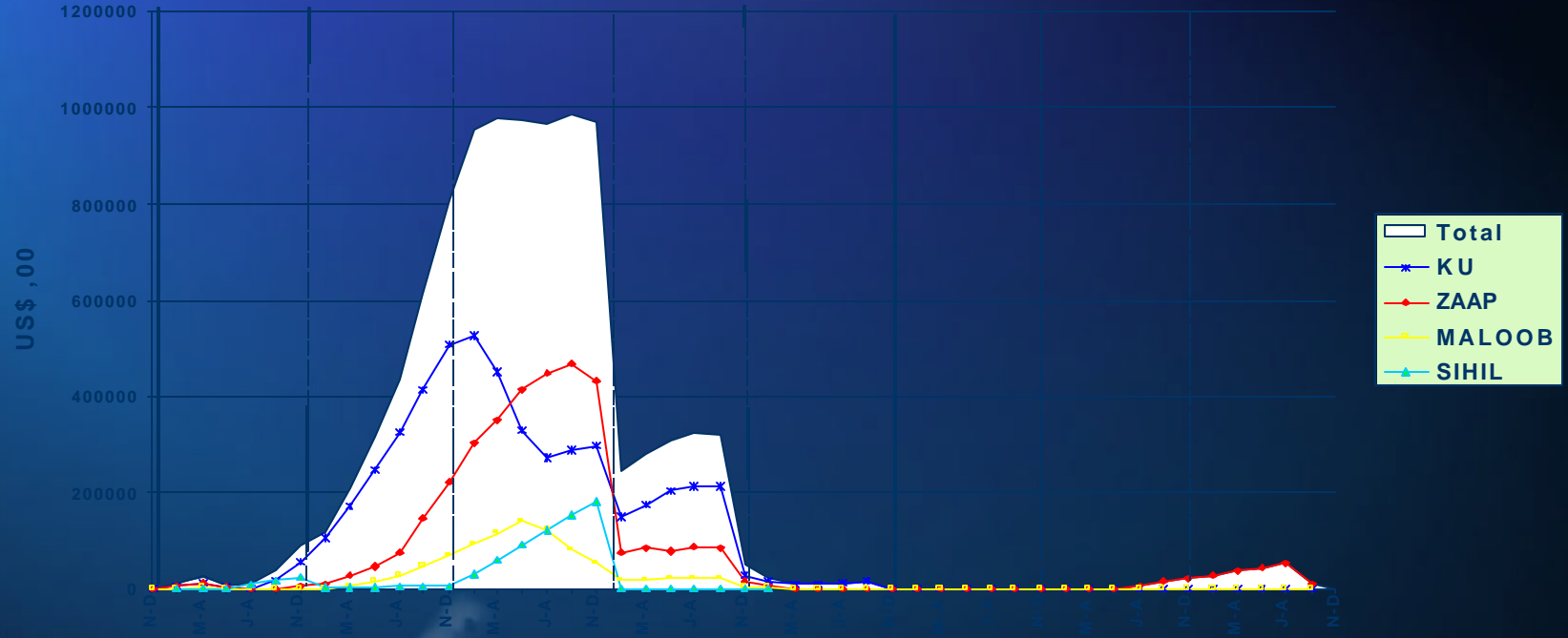


# Business Interruption Risk Management



# Linking Risk Quality to Performance Measurement





Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Max. Risk	232	90,290	807,004	1,100,262	303,993	22,039	0	21,912	52,948
KU	180	57,573	587,373	526,789	213,121	14,503	0	0	0
ZAAP	52	5,653	223,120	302,703	86,665	5,966	0	21,912	52,948
MALOOB	0	697	70,213	93,870	22,807	1,570	0	0	0
SIHIL	0	26,367	7,100	182,900	1,400	0	0	0	0

# Project Risk Management

## Total-Field Construction

### Accumulated Risk



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