



China Aviation Oil (Singapore) Corporation Ltd
中国航油（新加坡）股份有限公司

26 September 2016

Corporate Access Day 2016 2016年投资者接待日



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China Aviation Oil (Singapore) Corporation Ltd
中国航油（新加坡）股份有限公司

26 September 2016

Risk Management in CAO

中国航油的风险管控

Milestones of Risk Management 风险管控里程碑



China Aviation Oil
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2006, A New Start 一个新的起点



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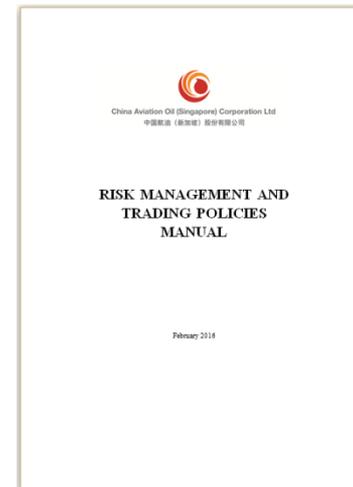


**New Risk Mgmt Framework
新的风险管理框架**

**New Strategic Investor
新的战略合作伙伴**



**New Professionals
新的专业管理人员**

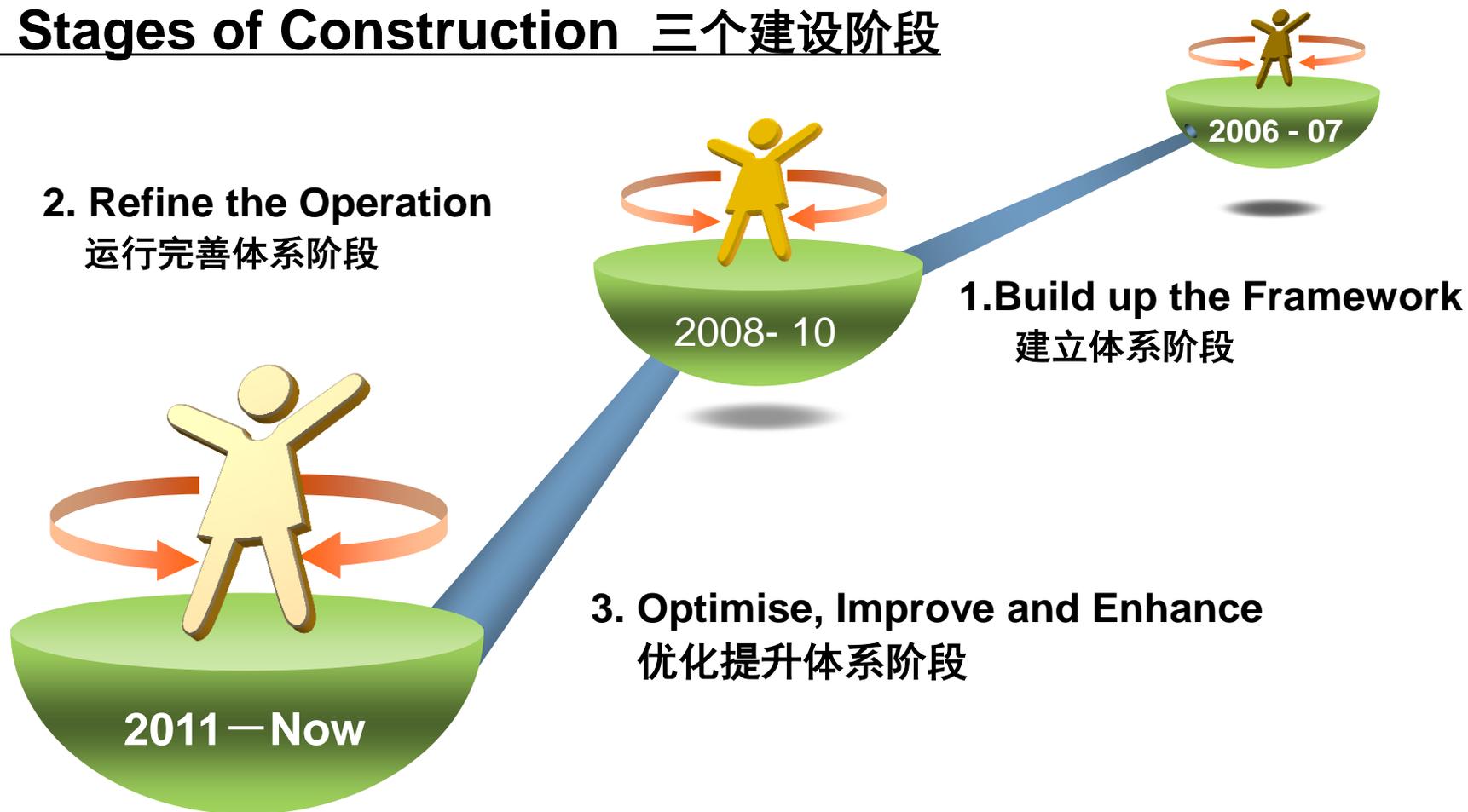


Milestones of Risk Management 风险管控里程碑



China Aviation Oil
中国航油(新加坡)股份公司

3 Stages of Construction 三个建设阶段





China Aviation Oil (Europe) Limited
中国航油(欧洲)有限公司

Risk Management in CAO:
中国航油的风险管控:

Risk Management Structure
风险管控构架

Risk Management Structure

风险管控构架



China Aviation Oil
中国航油(新加坡)股份公司

Three-tier Structure with Dual Reporting Lines

三层构架、双线汇报机制



Risk Management Structure

风险管控构架



China Aviation Oil
中国航油(新加坡)股份公司

1. Risk Management Committee (RMC) at the Board Level 董事会层面的风险管理委员会

□ The Organisation 风险管理委员会的组成

- RMC is composed of senior directors who are familiar with risk management and chaired by a BP director. The committee is beyond what is required for the governance of a public listed company.

风险管理委员会是在新交所治理要求之外设立的，由熟悉企业风险治理的资深董事组成，主席由BP董事担任。RMC的设立超越对上市公司通常的治理要求。

□ The Responsibility 风险管理委员会的职责

- To set up the risk management framework, risk management policy and risk appetite of the organisation; to review the new business and ultimate limits for risk control. 负责制定公司的风险管理框架、风险政策和风险偏好；负责审批新业务及审批各类风险的最高限额。

Risk Management Structure

风险管控构架



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2. Company Risk Meeting (CRM) at the Tactical/Policy Level 策略/政策层面的公司风险会议

□ The Organisation 公司风险会议的组成

- Head of Risk Management (as the chairman)
风险管理部主管（会议主席）
- CEO, CFO and COO
公司首席执行官、首席财务官和首席运作官
- Head of key functional departments
公司主要职能部门主管（贸易、运作、财务、法律 ...）

□ The Responsibility 公司风险会议的职责

- To discuss and review all risk topics arising from daily operation of the company.
讨论和审议公司经营过程中遇到的风险课题。

Risk Management Structure

风险管控构架



China Aviation Oil
中国航油(新加坡)股份公司

3. Risk Management Department at the Operation Level 运作层面的公司风险管理部

- **RM Department is comprised of professionals in risk control, who are doing monitoring, analysing, reporting and mitigation of below risks:**

风险管理部由风险管控方面的专业人士组成，他们负责监督、分析、报告和缓解下面的这些风险：

- **Market Risk 市场风险**
- **Credit Risk 信用风险**
- **Operational Risk 运作风险**
- **Compliance Risk 守规风险**
- **Enterprise and Other Risk 企业风险和其它风险**

Risk Management Structure

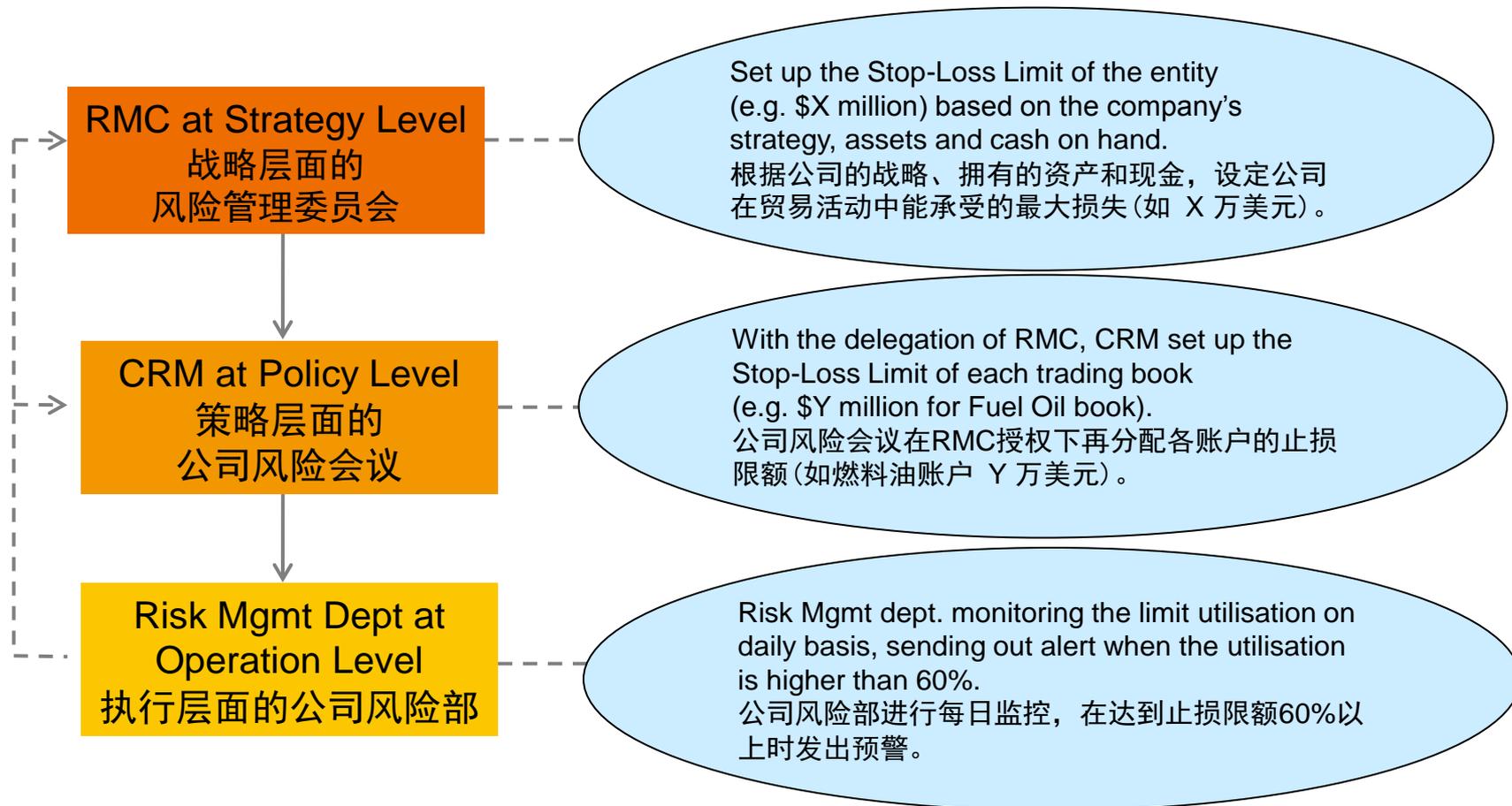
风险管控构架



China Aviation Oil
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An Example of Three-tier Management

三层管控构架举例





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中国航油(欧洲)有限公司

Risk Management in CAO:
中国航油的风险管控:

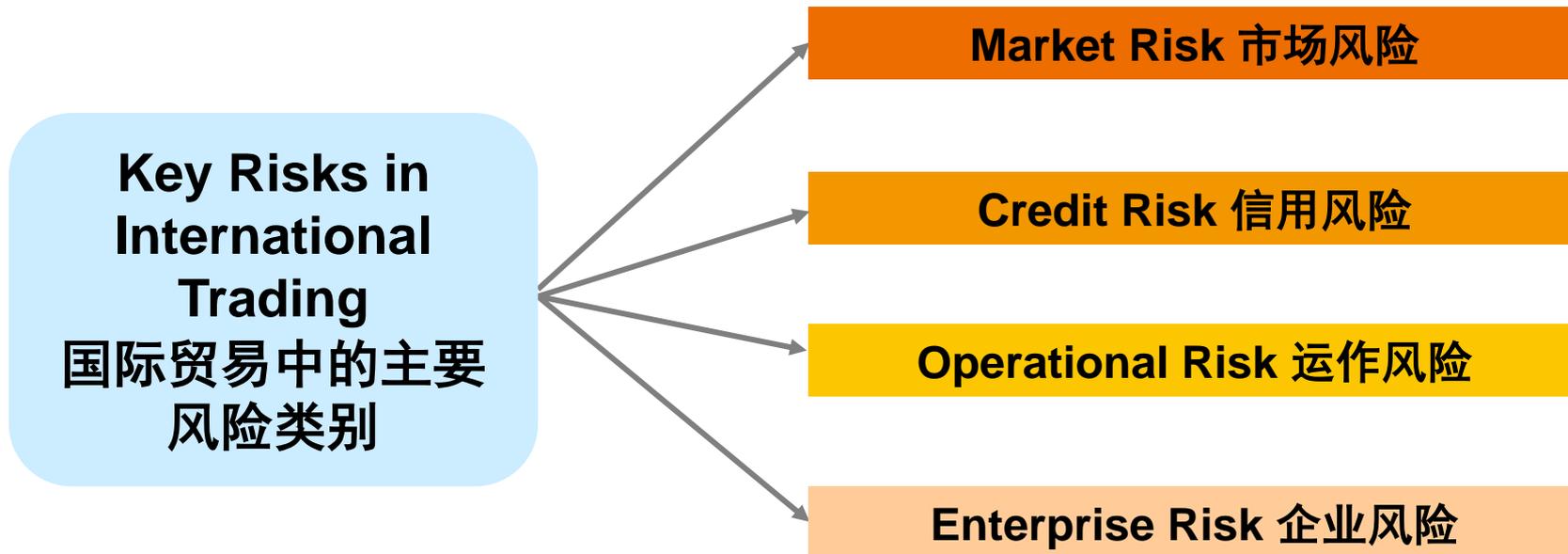
The Management of Key Risks
关键风险的管理

The Management of Key Risks

关键风险的管理



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We're using **different quantifying measures** in reporting and managing various types of risks.

在管理主要风险的过程中，我们运用量化的技术与方法对多种风险进行报告和管理。

Market Risk 市场风险



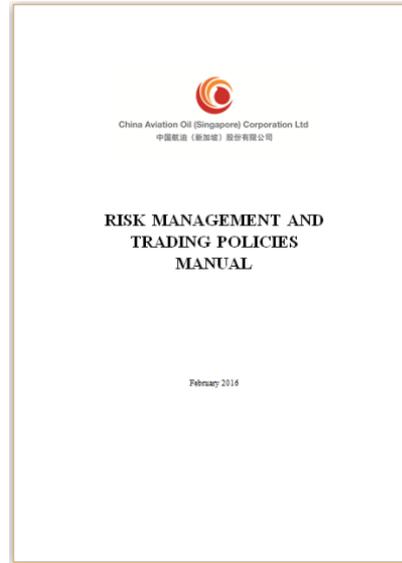
China Aviation Oil
中国航油(新加坡)股份公司

CHINA AVIATION OIL (SINGAPORE) CORPORATION LTD					
Daily Risk and P&L Report of Company Portfolio 每日风险及盈亏报告 - 公司合计					
Report date: 16 Sep 2010 Thursday		2010-9-16			
P&L Summary & Metrics 每日损益及指标					
Company	Trade Book	YTD P&L	Daily P&L	Weekly P&L	Monthly P&L
公司	交易账户	年盈亏	日盈亏	周盈亏	月盈亏
CAOC SG	JET-SUPPLY	6,396,734	201	(764)	217,628
CAOC SG	MD-DISTIL	16,726,241	(1,917,762)	(763,519)	(995,432)
CAOC SG	CR	223,776	167	167	(52,344)
CAOC SG	PETCHENM	3,663,762	(68,263)	(182,869)	(52,344)
CAOC SG	FUEL OIL	126,413	4,538	(4,044)	(7,149)
CAOC SG	COMMISSION	13,900	0	0	0
CAOC SG	TOTAL 合计	26,831,342	(1,647,777)	(1,913,155)	(1,460,846)

LIMIT MONITORING 限额监控			
Total CAO Trading Books			
LIMIT DESCRIPTION 限额描述	Value 数量	Limit 限额	Utilization (%) 使用率
NET EXPOSURE 净敞口	274	600,000	0%
EMT 违约敞口	16,306,816	4,000,000	4%
FUND UTILIZATION 资金占用	16,926,000	170,000,000	1%
STOP LOSS 止损	16,306,816	6,000,000	3%
VAR 风险值	187,269	2,000,000	10%
TIME SPREAD 期限敞口	214,294	2,040,000	10%
CURVE/PRODUCT SPREAD 期限/产品敞口	49,028	1,760,000	3%
MAX TERM CONTRACT DURATION - PHYSICAL FIXED PRICE 实物固定价格合约最长期限	6	Term: 12 MONTH	3%
MAX TERM CONTRACT DURATION - PHYSICAL FLOATING PRICE 实物浮动价格合约最长期限	6	Spot: 3 MONTH	3%
PAPER MATURITY 合约到期	4	12 MONTH	23%
Package Operating Lease Duration 包机运营租约期限	12	24 MONTH	50%
Package Operating Lease counterpart 包机运营租约对手	3,417,217	6,000,000	57%
CR Book MAT 信用风险敞口	223,776	100,000	2%

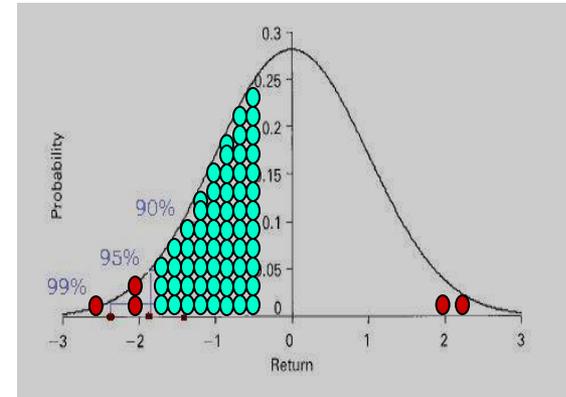
Risk Reports 风险报告

(Daily, Mthly and Quarterly Report
日报, 月报及季度报告)



Trading Limits 贸易限额

(Volumetric Exposure, MVaR and
Stop-Loss
如持仓量, MVaR和止损限额)



Stress Testing & Scenario Analysis 压力测试与场景分析

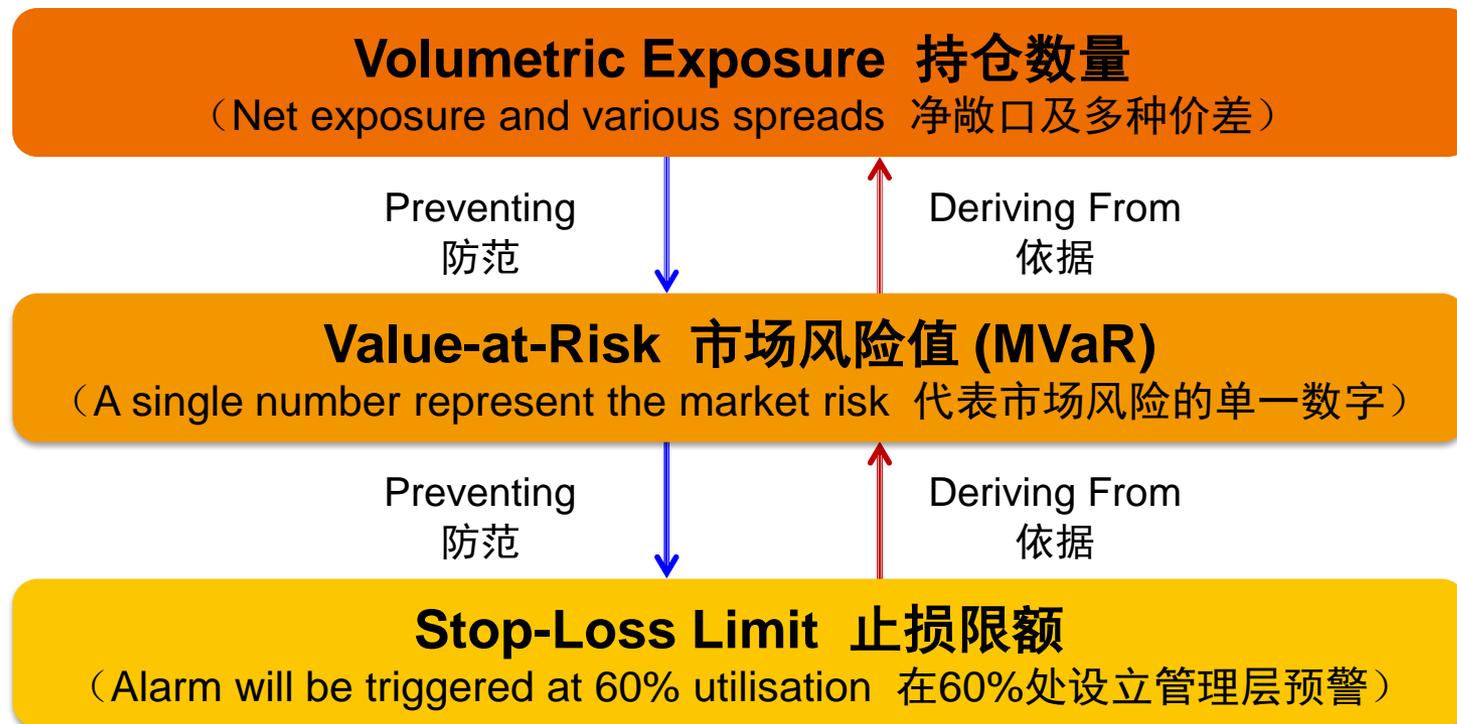
(Supplement method to the principle
MVaR measures
对MVaR方法的必要补充)

Market Risk 市场风险



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Market Risk Limits Monitoring on Daily Basis 每日监控的市场风险贸易限额



Market Risk 市场风险



China Aviation Oil
中国航油(新加坡)股份公司

□ Risk Reporting 风险报告制度

- Currently we have daily, monthly and quarterly reports to reflect different level of risk exposures and performance.

目前我们有风险日报、月度报告、季度报告，来汇总不同层面的风险及绩效。

金融衍生品业务季报报表						
企业名称: 中国航油(新加坡)股份有限公司 2010年7月1日						
序号	企业名称	业务类型	交易品种	场内/场外	境内/境外	期末持仓规模
1	中国航油新加坡公司	掉期	新加坡航煤 SING JET	场外	境外	500,000
2	中国航油新加坡公司	掉期	新加坡航煤油 SING GO	场外	境外	0
3	中国航油新加坡公司	掉期	新加坡航煤煤油价差 SING KEROJADE	场外	境外	0
4	中国航油新加坡公司	期货	洲际交易所柴油 ICE DD	场内	境外	0
5	中国航油新加坡公司	期货	洲际交易所布伦特 ICE Brent	场内	境外	0
6	中国航油新加坡公司	期货	WTI原油期货 WTI NYMEX RD	场内	境外	0
7	中国航油新加坡公司	期货	WTI原油期货 WTI NYMEX WTI	场内	境外	0
8	中国航油新加坡公司	掉期	石脑油 NAPHTHA	场内	境外	-18,776
合计:						513,014

注: 业务类型: 1. 期货; 2. 期权; 3. 远期; 4. 掉期; 5. 组合产品; 6. 通过国内银行购买的金融衍生品; 7. 其他。

CAO Monthly Risk & P&L Report for Jul 2010 中国航油(新) 2010年7月风险和损益报告

A) 2010 Monthly Performance By Book 各账户2010年月度业绩



P&L Summary & Notes 盈亏损益汇总表					
Company	Trade Book	YTD P&L	Daily P&L	Weekly P&L	Monthly P&L
CAOI SG	JET-SUPPLY	6,286,784	231	(704)	217,625
CAOI SG	MID-DISTILL	16,726,241	(191,762)	(70,316)	(195,432)
CAOI SG	CR	223,796	(6)	(6)	(22,694)
CAOI SG	PETCHEM	(546,790)	(46,283)	(18,248)	(68,350)
CAOI SG	FUEL OIL	126,453	6,138	(4,044)	(71,550)
CAOI SG	COMMISSION	13,969	0	0	0
CAOI SG	TOTAL 合计	24,831,242	(145,677)	(93,316)	(140,408)

P&L of CR book was half of the value calculated by Albyro system. CR 账户的损益为 Albyro 系统的一半。

Company Portfolio Summary 公司整体账户情况	
1) P&L Movement - Total daily movement was -\$188K, which was driven by denurage updating in MD book (\$160K) and MTM loss in Petchem book (\$28K).	
2) New trades - Totally 4 new trades, in which Petchem book have 1 BZ and 2 NPT new trades; FO have a new 180 paper trade.	
3) Volumetric Exposure - Total exposure was long 0.3KB; Key positions in the portfolio including 514KB time spread (long FT6 Jet, GO and FO180) and 68KB product spread (long BZ/NPT).	
4) Limit Monitoring - 公司整体净敞口数为多头 0.33 万桶。公司的主要持仓包括 51.4 万桶的时间价差 (多头航煤、柴油和 180 燃料油的前后价差) 以及 6.0 万桶的产品价差 (多头航煤和柴油价差)。	

Limit Monitoring 限额监控			
LIMIT DESCRIPTION 限额描述	Total CAO Trading Books		
	Value 数值	Limit 限额	Utilization (%) 使用率
NET EXPOSURE 净敞口	279	600,000	EBL (%) 0%
MAT 净头寸	16,306,913	4,600,000	USD 美元 35%
FUND UTILIZATION 资金占用	6,639,026	170,000,000	USD 美元 4%
STOP LOSS 止损	16,306,913	9,000,000	USD 美元 10%
VAR 风险值	197,358	2,000,000	USD 美元 10%
TIME SPREAD 价差	514,284	2,640,000	EBL (%) 19%
CRACK PRODUCT SPREAD 裂解产品价差	89,639	1,740,000	EBL (%) 5%
MAX TERM CONTRACT DURATION - PHYSICAL FIXED PRICE 长期合约最长期限 - 现货固定定价	0	Term 12	MONTH 月 0%
MAX TERM CONTRACT DURATION - PHYSICAL FLOATING 长期合约最长期限 - 现货浮动定价	5	12	MONTH 月 28%
PAPER MATURITY 纸货到期日期	4	18	MONTH 月 22%
Tarriage Operating Lease Duration 包租期运营租期	12	24	MONTH 月 50%
Tarriage Operating Lease cost/annum 包租期运营租期成本	3,417,317	9,000,000	USD 美元 38%
CR Book MAT 净头寸	223,796	(600,000)	USD 美元 0%

Market Risk 市场风险

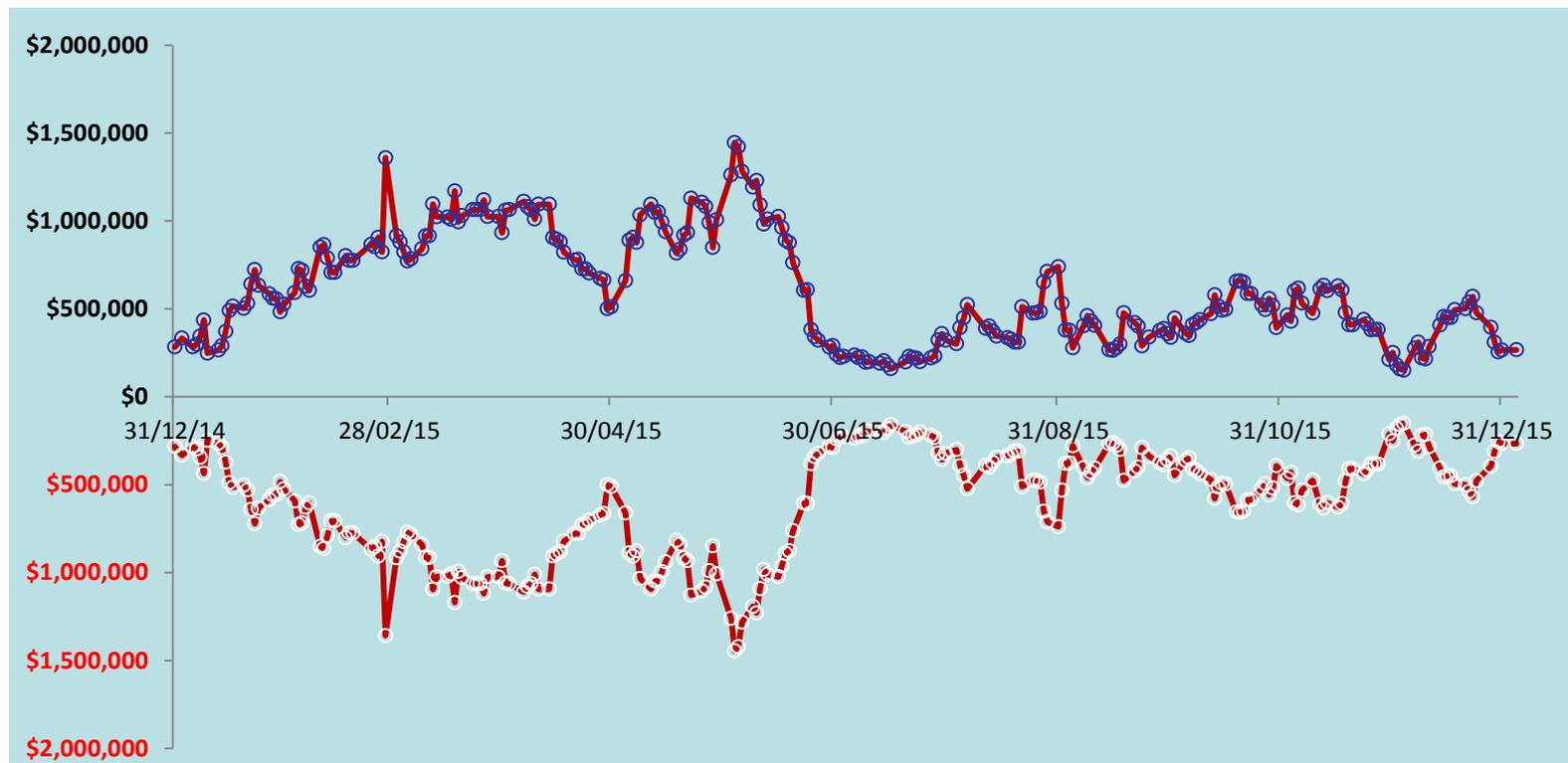


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□ MVaR Utilisation

Market Value-at-Risk (MVaR) is a key indicator of the market risk taken by the organization.

市场风险值 (MVaR) 是衡量一个机构承担市场风险大小的关键指标。



Market Risk 市场风险



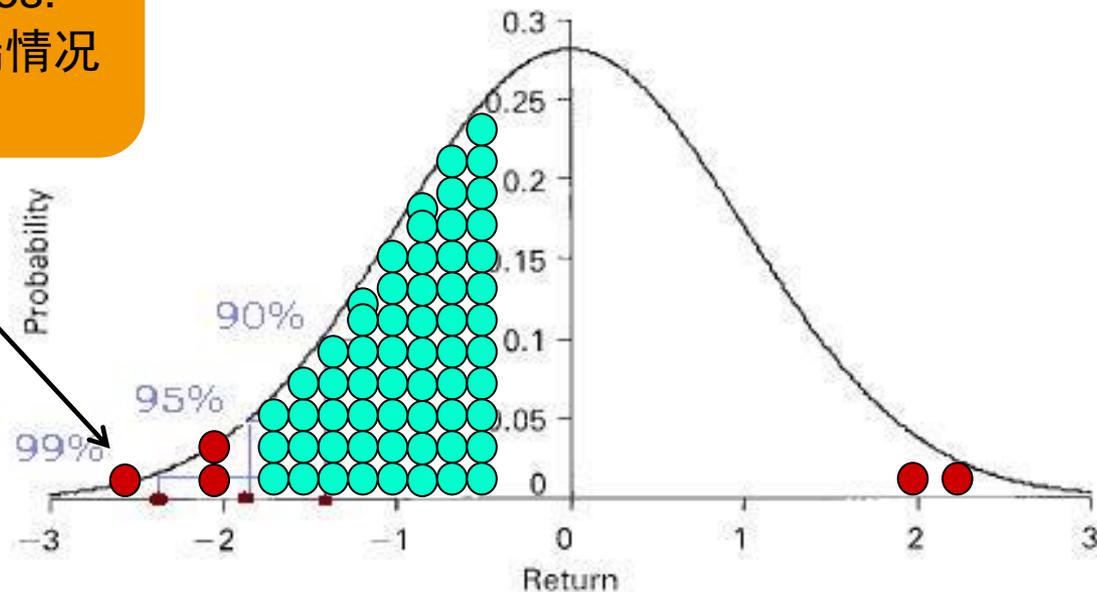
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□ Stress Testing

The extreme scenarios are covered in stress testing, which is a supplement method of the principle MVaR measures.

压力测试和场景分析作为市场风险值 (MVaR) 的必要补充。

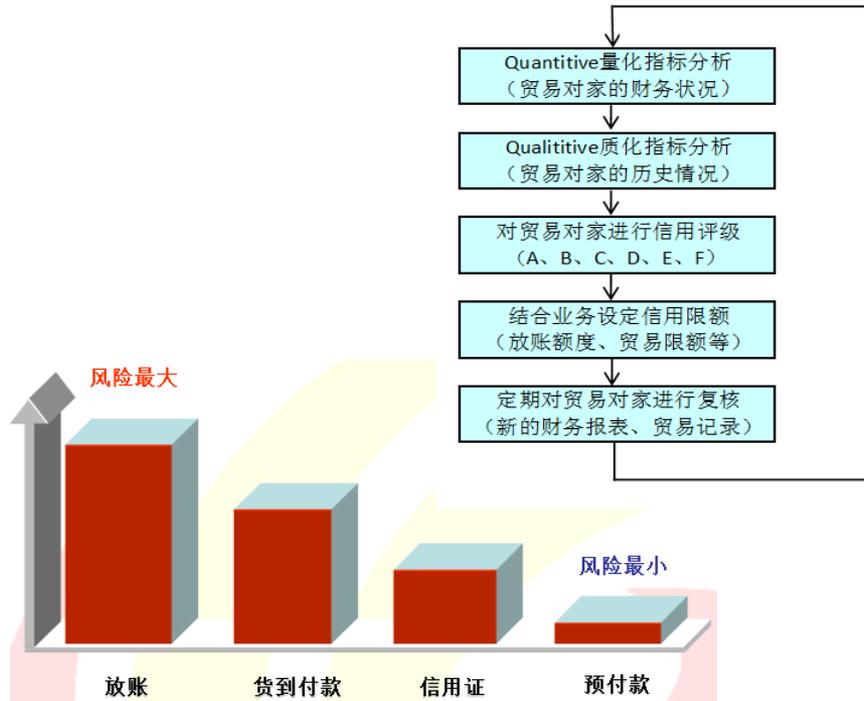
The red dots represent the extreme scenarios.
图中的红点代表极端情况下的场景。



Credit Risk 信用风险



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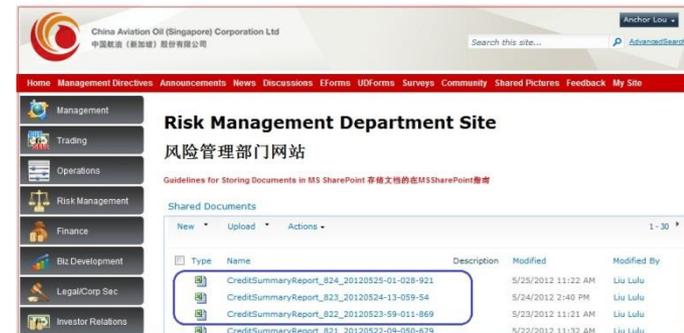
Credit Mitigation 信用缓解

Deal negotiation: Using Letter of Credit, Parent Company Guarantee or insurance to mitigate credit risks

交易中：用信用证、母公司担保或信用保险等来缓解

Credit Assessment 信用评估

Before deal conclusion:
It's compulsory to do credit assessment of the counterparty
交易达成前：
必须完成对家的信用评估



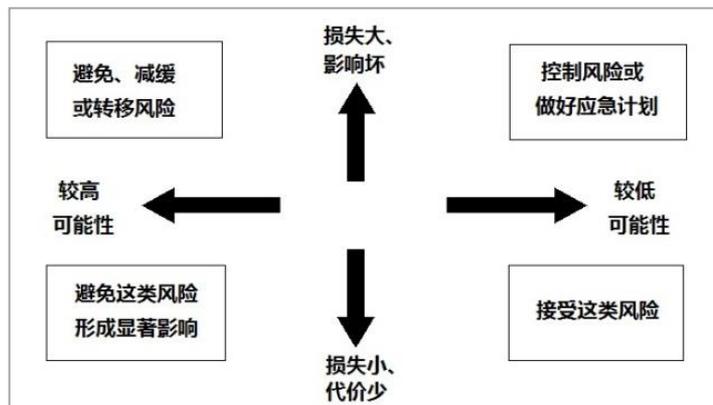
Credit Report 信用报告

After deal concluded: Monitoring credit exposure and doing other analysis
交易后：包括信用敞口、信用分布、预期信用损失等

Operational Risk 运作风险



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Identification of Risk Type 界定类型

Through ERM to identify potential risks, define risk grade, and formulate countermeasures
通过ERM来辨识潜在风险、界定风险等级、并制定应对措施

Internal Control System 内控制度

E.g. credit management, auditing, chartering review, business continuity plan, etc.
如信用证管理、租船审核、业务持续计划等等

Preventive Measures 防范措施

E.g. disaster drills, business continuity plan, etc.
如灾难应急的演习、业务运行延续计划等



Enterprise Risk Management

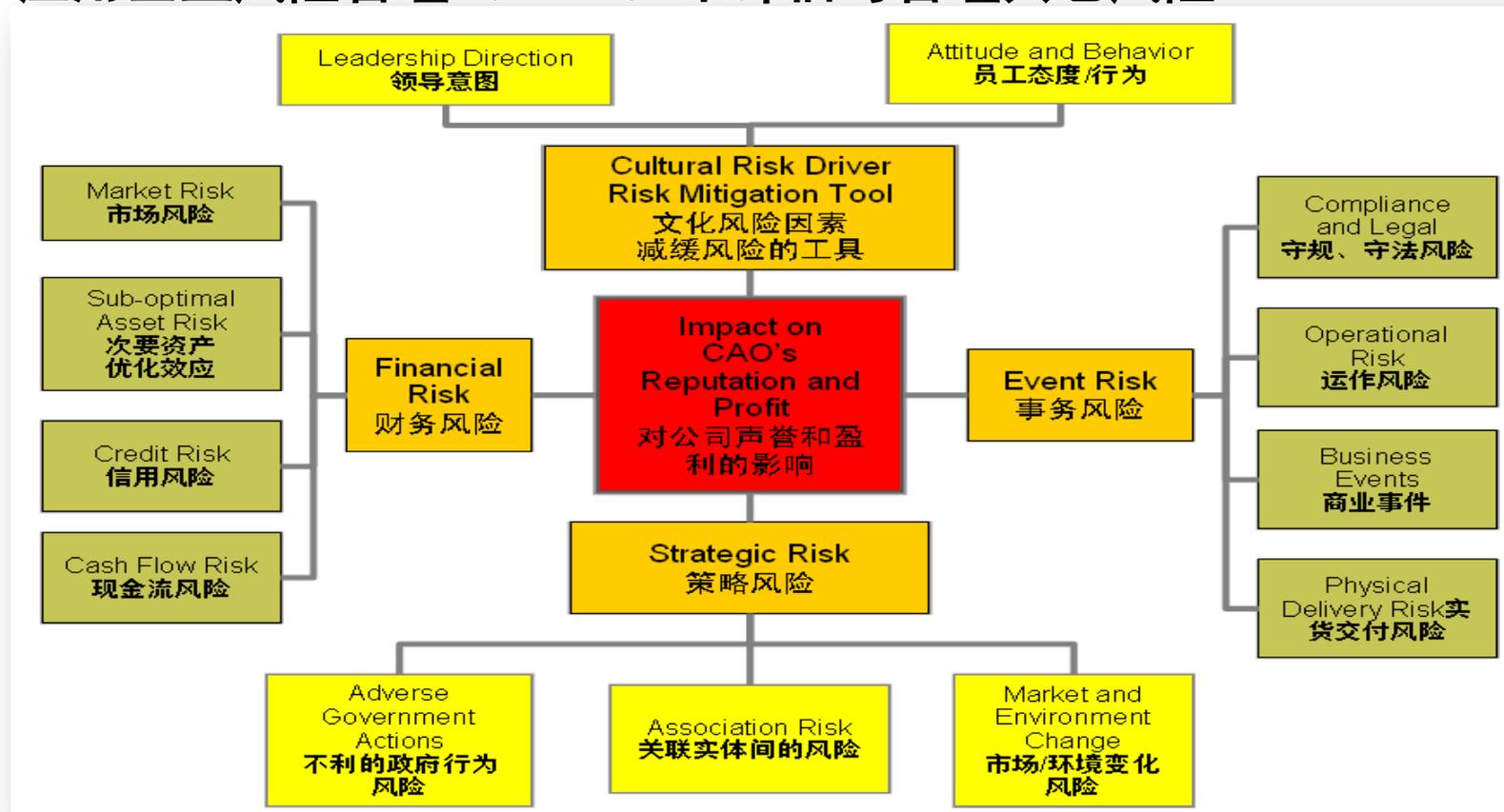
企业风险管理



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- Using Enterprise Risk Management (ERM) to evaluate and managing other risks

应用企业风险管理（ERM）来评估与管理其它风险





China Aviation Oil (Europe) Limited
中国航油(欧洲)有限公司

**Risk Management in CAO:
中国航油的风险管控:**

**Risk Management System,
Personnel and Culture
风险管控系统, 人员与文化**

Risk Management System

风险管控信息系统



China Aviation Oil
中国航油(新加坡)股份公司

- Continuous efforts to integrate systems and processes for timely and accurate measure of risks

致力于集成系统与流程，确保及时准确地衡量风险

Deal Entry
交易录入

Risk Mgmt
风险计算

Operation
货船信息更新

Settlement
结算与票据

The screenshot displays the 'Commodity XL' software interface. The main window is titled '*Trade Manager (917 Items) - Last Updated: 6/7/2015 6:53:38 PM'. The interface includes a menu bar (File, Setup, Administration, Trade, Operations, Settlement, View, Tools, Window, Help) and a toolbar with various icons. A left-hand navigation pane lists several modules: Trade Import, Trade Blotter, Trade Manager, Confirmation Manager, Option Manager, Position Manager, Favorites, Administration, Trading (highlighted), Operations, Settlement, Market Data, Forward Curves, Reports, Process, Risk, Organizer, Xchange, and Hidden. The main area shows a table of trades with columns for Trade Number, Date, Strategy, Ref, and Trader. The table contains 17 rows of data, all with the trader 'Zheng Wang'. A 'Find' search box is located at the bottom left of the window.

Trade Number	Date	Strategy	Ref	Trader
1004	11/3/2014	SG JET_Sup - Mar14	120336-125887	Zheng Wang
1012	11/3/2014	SG JET_Sup - Mar14	120338-125889	Zheng Wang
1555	13/3/2014	SG JET_Sup - Mar14	120379-125942	Zheng Wang
2334	13/3/2014	SG JET_Sup - Mar14	120380-125943	Zheng Wang
1564	24/3/2014	SG JET_Sup - Apr14	120528-126129	Zheng Wang
2052	27/3/2014	SG JET_Sup - Apr14	120610-126225	Jason Wong
2054	27/3/2014	SG JET_Sup - Apr14	120612-126227	Jason Wong
2056	28/3/2014	SG JET_Sup - May14	120634-126253	Zheng Wang
2057	28/3/2014	SG JET_Sup - May14	120635-126254	Zheng Wang
2059	28/3/2014	SG JET_Sup - May14	120637-126256	Zheng Wang
2061	28/3/2014	SG JET_Sup - May14	120639-126258	Zheng Wang
2062	28/3/2014	SG JET_Sup - May14	120640-126259	Zheng Wang
2064	28/3/2014	SG JET_Sup - May14	120642-126261	Zheng Wang
2065	28/3/2014	SG JET_Sup - Apr14	120643-126262	Zheng Wang
2066	28/3/2014	SG JET_Sup - Apr14	120644-126263	Zheng Wang
2067	28/3/2014	SG JET_Sup - Apr14	120645-126264	Zheng Wang
2068	28/3/2014	SG JET_Sup - Apr14	120646-126265	Zheng Wang
2069	28/3/2014	SG JET_Sup - Apr14	120647-126266	Zheng Wang
2070	28/3/2014	SG JET_Sup - Apr14	120648-126267	Zheng Wang
2071	28/3/2014	SG JET_Sup - Apr14	120649-126268	Zheng Wang
2072	28/3/2014	SG JET_Sup - Apr14	120650-126269	Zheng Wang

Risk Management Personnel

风险管控人员



China Aviation Oil
中国航油(新加坡)股份公司

□ A Professional Team In Risk Control

一个专业的风险管控团队

- The Risk Management function is headed by a BP secondee, with a focus on **Market & Credit risks**.
风险管理团队的主管由BP派遣，主要关注于市场和信用风险。

- The Risk Management team possesses a wealth of experiences in credit, market and enterprise risk management with professional accreditation such as Energy Risk Professional (ERP), Financial Risk Manager (FRM) by Global Association of Risk Professionals (GARP) and Chartered Financial Analyst (CFA) credentials.

风险管理团队在信用、市场和企业管理方面拥有丰富经验，并拥有诸如由全球风险专业才联盟(GARP)验证的ERP、FRM资质和特许金融分析师(CFA)资质。



Global Association
of Risk Professionals



Risk Management Culture

风险管控文化



China Aviation Oil
中国航油(新加坡)股份公司

- Continuous efforts in training
在培训方面的不断努力



- Building up risk management culture within the whole organization
使风险管控文化在整个企业内得到推广。

Feedback from External Consultant

外部顾问对风险管控的评价



China Aviation Oil
中国航油(新加坡)股份公司

- Consultancy firm, Navitas, put forth the following comments after evaluating the company's risk management framework:
顾问公司Navitas进行评估后，对公司现有风险管控构架和实践提出正面的评价：

“The current approach is robust with effective risk evaluation, monitoring and reporting.”

“当前的做法是稳健的；能有效地评价、监控和报告风险”。



China Aviation Oil (Singapore) Corporation Ltd
中国航油（新加坡）股份有限公司

Thank You
谢谢

Fuel for Future 为明天加油