

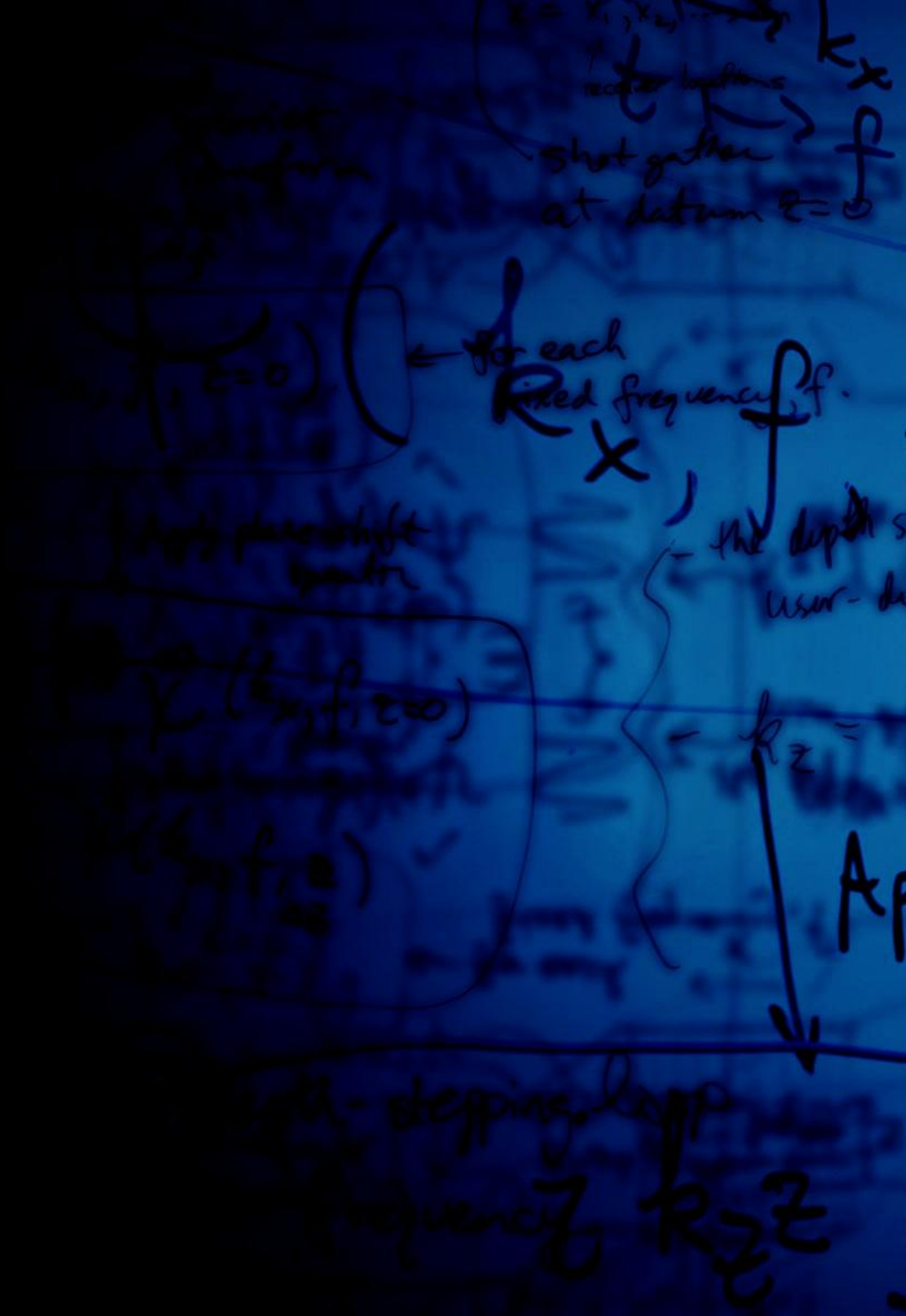


Russell

ALPS Aerospace

Matthew Maddocks
Russell Group Limited

2011



ALPS Aerospace

- Product Overview
- Risk Model
- Portfolio Capture
- Aggregate Analysis
- Airline Loss Simulation
- Pricing
- Portfolio Analysis
- Benefits



ALPS Aerospace – Product Overview

- ALPS Aerospace was developed to meet the following market needs:
 - Data capture and management of standard aviation market questionnaires.
 - Capture and management of risks underwritten, often not adequately done by in-house underwriting systems.
 - Integration of market third party data into underwriting process.
 - Analysis and decision making support at point of binding contracts.
- The analysis provided to users includes:
 - Aggregate analysis
 - Pricing analysis
 - Portfolio analysis



ALPS Aerospace – Risk Model

- Although configuration can be bespoke ALPS Aerospace standard set-up includes:
 - **Subject** – Airline insurance group placements, and aerospace manufacturers, captured as the subject within ALPS. Segmentation of subjects using market standard questionnaire schedules A, B, and C. Non questionnaire risks also captured for insurance analysis purposes and can be tracked, or untracked, depending on requirement.
 - **Subject Data** – Underlying each subject is a schedule of all operators that are covered under the placement, with further details of the fleet (at individual aircraft level) for that operator.
 - **Cover Type** – A two cover type model, Aviation Hull (H) and Aviation Liability (L), with portfolio and exposure capture either at individual cover type level (direct and reinsurance) or on a combined basis (retrocession).
 - **Event Type** – A default event type of All Risks, with the ability to define exposures and analysis for War perils.



ALPS Aerospace – Portfolio Capture

- ALPS Aerospace supports capture and analysis for the following inwards or outwards portfolios:
 - **Direct** – All airline and aerospace manufacturers captured, including facultative reinsurance, binding authority acceptance, and excess policies.
 - **Treaty Reinsurance** – Quota share, surplus treaty, whole account excess of loss, and risk excess. All standard aviation market structures captured including RAD and/or LOD, interlocking, floating retentions, benefiting policies, mirror layers, commission protectors, and varying reinstatements. For all treaty reinsurance underlying client questionnaire captured.
 - **Retrocession** - Ultimate Net Loss (UNL) supported with capture of client banded questionnaire. Industry Loss Warranty (ILW), either standalone in conjunction with UNL conditions, with original loss warranty, deemed line, original loss window, and/or fatality warranty.



ALPS Aerospace – Portfolio Capture

- Direct Screenshot

Alps Portfolio Manager

Home Create External Data Database Tools

Other Lines

Subject: [All Subjects] Broker: [All Brokers] Y.O.A.: [All Years]
 Cover Type: [All Cover Types] As At: [Full History]

Subject	CoverType	Y.O.A.	Inception	Expiry	Attachment	Limit	Excess Currcy	ROE	MOP	Underwriter	U/W Ref	Line%	#
AENA	L	2008	30-Jan-2008	29-Jan-2009	30-Jan-2008	1,000,000,000	0 EUR	0.781677	Direct	Default U	RUSS200274 Liab	0.75	
AENA	L	2009	30-Jan-2009	29-Jan-2010	30-Jan-2009	1,000,000,000	0 EUR	0.781677	Direct	Default U	RUSS200274 Liab	0.75	
Aermacchi	H	2006	15-Apr-2006	14-Apr-2007	15-Apr-2006	51,000,000	0 USD	1	Direct	Default U	RUSS200026 Hull	2.115	
Aermacchi	L	2005	14-Apr-2005	13-Apr-2006	14-Apr-2005	642,500,000	0 EUR	0.781677	Direct	Default U	RUSS200026 Liab	2.12	
Aermacchi	L	2006	15-Apr-2006	14-Apr-2007	15-Apr-2006	720,000,000	0 USD	1	Direct	Default U	RUSS200026 Liab	2.115	
Aero North Icelandic	H	2008	29-Mar-2008	28-Mar-2009	29-Mar-2008	20,000,000	0 USD	1	Direct	Default U	RUSS200306 Hull	2.5	
Aero North Icelandic	H	2009	29-Mar-2009	28-Mar-2010	29-Mar-2009	20,000,000	0 USD	1	Direct	Default U	RUSS200306 Hull	2.5	
Aero North Icelandic	L	2008	29-Mar-2008	28-Mar-2009	29-Mar-2008	500,000,000	0 USD	1	Direct	Default U	RUSS200306 Liab	2.5	
Aero North Icelandic	L	2009	29-Mar-2009	28-Mar-2010	29-Mar-2009	500,000,000	0 USD	1	Direct	Default U	RUSS200306 Liab	2.5	
Aerocontractors of M	H	2008	01-Jul-2008	30-Jun-2009	01-Jul-2008	20,000,000	0 USD	1	Direct	Default U	RUSS200385 Hull	1	
Aerocontractors of M	H	2009	01-Jul-2009	30-Jun-2010	01-Jul-2009	20,000,000	0 USD	1	Direct	Default U	RUSS200385 Hull	1.5	
Aerocontractors of M	H	2009	01-Jul-2009	30-Jun-2010	01-Jul-2009	30,000,000	0 USD	1	Direct	Default U	RUSS200386 Hull	1.5	
Aerocontractors of M	L	2008	01-Jul-2008	30-Jun-2009	01-Jul-2008	650,000,000	0 USD	1	Direct	Default U	RUSS200385 Liab	1	
Aerocontractors of M	L	2009	01-Jul-2009	30-Jun-2010	01-Jul-2009	650,000,000	0 USD	1	Direct	Default U	RUSS200385 Liab	1.5	
Aerocontractors of M	L	2009	01-Jul-2009	30-Jun-2010	01-Jul-2009	150,000,000	0 USD	1	Direct	Default U	RUSS200386 Liab	1.5	
Aeroflot	H	2008	02-Jul-2008	01-Jul-2009	02-Jul-2008	175,000,000	0 USD	1	Direct	Default U	RUSS200369 Hull	1	
Aeroflot	H	2009	02-Jul-2009	01-Jul-2010	02-Jul-2009	175,000,000	0 USD	1	Direct	Default U	RUSS200369 Hull	2	
Aeroflot	L	2008	02-Jul-2008	01-Jul-2009	02-Jul-2008	1,000,000,000	0 USD	1	Direct	Default U	RUSS200369 Liab	1	
Aeroflot	L	2009	02-Jul-2009	01-Jul-2010	02-Jul-2009	1,000,000,000	0 USD	1	Direct	Default U	RUSS200369 Liab	2	
Aerolineas Argentina	H	2009	01-Apr-2009	31-Mar-2010	01-Apr-2009	150,000,000	0 USD	1	Direct	Default U	RUSS200526 Hull	1.5	
Aerolineas Argentina	L	2009	01-Apr-2009	31-Mar-2010	01-Apr-2009	1,750,000,000	0 USD	1	Direct	Default U	RUSS200526 Liab	1.5	
Aerolineas Principal	H	2009	29-Jun-2009	28-Jun-2010	29-Jun-2009	10,000,000	0 USD	1	Direct	Default U	RUSS200564 Hull	4	
Aerolineas Principal	L	2009	29-Jun-2009	28-Jun-2010	29-Jun-2009	250,000,000	0 USD	1	Direct	Default U	RUSS200564 Liab	4	
Aeromexico	H	2005	01-Jun-2005	31-May-2006	01-Jun-2005	200,000,000	0 USD	1	Direct	Default U	RUSS200050 Hull	1	
Aeromexico	H	2006	01-Jun-2006	31-May-2007	01-Jun-2006	200,000,000	0 USD	1	Direct	Default U	RUSS200050 Hull	0.75	
Aeromexico	H	2007	01-Sep-2007	31-Aug-2008	01-Sep-2007	200,000,000	0 USD	1	Direct	Default U	RUSS200230 Hull	1	

Record: 1 | No Filter | Search

Report



ALPS Aerospace – Portfolio Capture

- Treaty Screenshot

Alps Portfolio Manager

Home Create External Data Database Tools

Edit Programme

Reinsured MILAN Programme Name MILAN 2009 Actual Y.O.A. 2009 Type XOL Mode Renewed

Risks From <Open> To <Open> Losses From 01-Jan-2009 To 31-Dec-2009 Casualty Count Basis All Casualties Use Calculated BI Losses

Premium-related Amounts are in USD R.O.E. 1 Original Premium Income 245,000,000 Status Estimated

Excess 10,000,000 or % of 250,000,000 whichever the Lesser Excess is WTL Max. Line % 100 Min. Line % 0

Limits UNL Any one Loss Interlocking Optional Loss-related Amounts are in USD R.O.E. 1 Tot Ind <As per Layers>

Layers Types Locales Benefit

No	Type	Limit	Prem Basis	Premium Pr.Rate	Min Prem	Max Prem	Brokerage	% Max Brok	PP	CP	Backup	Stretch
1	Core	12,500,000	Income	0.21429	5,250,000	Unlimited	0	10				50,000,000
2	Core	25,000,000	Income	0.17346	4,250,000	Unlimited	0	10				75,000,000
3	Core	32,500,000	Income	0.10188	2,496,000	Unlimited	0	10				97,500,000
4	Core	40,000,000	Income	0.07347	1,800,000	Unlimited	0	10				80,000,000
*						Unlimited						

Policy Number Order % 100 Slip Leader

Reinstatements

Grp No	How Many	Rate%	Value	U/W Ref	Line%	Status	Asif%	Pool	Underwriter	Broker	Stat Cat 1	Stat Cat 2	Stat Cat 3
1	3	100	0	ABB	5	Estimated	5		Default L				
*									Default L				

Lines

ALPS Aerospace – Aggregate Analysis

- ALPS Aerospace 2 main aggregate reports
 - **Impact Analysis** - Calculates portfolio loss for user defined market loss(es). Market loss can be actual loss or realistic disaster scenario.
 - *Screenshot of impact loss entry and results*

Losses Underwriters Results Reports

DOL: 30 Nov 2009 Name: Air France Type: [v]

Location: [v] Total Casualties: 0 of which 0 are Fatalities

Subject	CoverType	Valuable	Loss Value
Air France	Hull		50,000,000
Air France	Liability		300,000,000
Boeing/MDC	Liability		300,000,000
*			

Losses Underwriters Results Reports

Level: Summary Detail Layer Events

Date of Loss	Loss Event	Party	Inward Loss	Inward Premium	Outward Loss	Outward Premium	Balance
30-Nov-2009	Air France		11,590,000	0	0	0	11,590,000
30-Nov-2009	Air France	CARDIFF	75,000	19,074	0	0	55,926
30-Nov-2009	Air France	CELTIC	189,750	9,207	0	0	180,543
30-Nov-2009	Air France	CHELSEA	759,375	19,853	0	0	739,522
30-Nov-2009	Air France	EVERTON	560,000	302,420	0	0	257,580
30-Nov-2009	Air France	FULHAM	134,751	34,975	0	0	99,776
30-Nov-2009	Air France	HULL	139,385	45,300	0	0	94,085
30-Nov-2009	Air France	LEICESTER	938,636	232,906	0	0	705,730
30-Nov-2009	Air France	MAN CITY	488,654	175,916	0	0	312,738
30-Nov-2009	Air France	MAN UTD	0	0	0	0	0
30-Nov-2009	Air France	RANGERS	15,000	2,250	0	0	12,750
30-Nov-2009	Air France	STOKE	376,062	70,560	0	0	305,502
30-Nov-2009	Air France	TOTTENHAM	311,250	118,339	0	0	192,911

	Loss	TOTALS Premium	Net
Inward	15,577,863	1,030,800	14,547,063
Outward	0	0	0
Retained	15,577,863	1,030,800	14,547,063

Export



ALPS Aerospace – Aggregate Analysis

- **Band Analysis** - Calculates a banded matrix of portfolio losses for user defined single aircraft market losses, with optional manufacturer losses
- *Screenshot of banded report*

ALPS aerospace

Band Matrix (Inward Gross Losses)

Analysis: 195 Aggregates | D.O.L.: 31-Dec-2008 | Subject Type (this page): A

Underwriter: Default Underwriter	Year Of Account: (Combined)														
	100,000,000	100,000,000	100,000,000	100,000,000	100,000,000	200,000,000	200,000,000	200,000,000	200,000,000	200,000,000	200,000,000	200,000,000	200,000,000	200,000,000	2,700,000,000
H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Subject	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8	Band 9	Band 10	Band 11	Band 12	Band 13	Band 14
Aeroflot	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379	3,333,379
Aeromexico	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650	3,116,650
Air Algérie	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640	1,266,640
Air Berlin	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333	3,673,333
Air Canada	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700	4,647,700
Air Europa	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700	3,750,700
Air France	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500	3,067,500
Air India	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750	1,483,750
Air Jamaica	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000	834,000
Air New Zealand	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000	653,000
Air Plus Comair	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000	601,000
Air Transat	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400	3,026,400
Alitalia	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250	3,363,250
All Nippon Airways	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700	3,767,700
Garuda Indonesia	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900	3,810,900
British Airways	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000	4,900,000
Cathay Pacific	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333	3,333,333
China Airlines	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371	3,173,371
China Eastern Airlines	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000	4,270,000
Deutsche Lufthansa	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000	1,690,000
Eagle Air	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Egypt Air	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Ethiopian Airlines	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700	1,267,700

Unless stated otherwise, all financial values are in USD | Page 1 of 0 | Printed on 05-Jul-2011 at 12:07



ALPS Aerospace – Airline Loss Simulation

- Within ALPS Aerospace there is the option of using the bespoke loss simulation engine to create an event table to run the pricing and portfolio modeling.
- The loss simulation is fully configurable to user parameters to ensure that it reflects their view of the risks.
- Simulation engine combines user settings from 3 third party data sources to generate global airline losses.
- Third party data is validated, mapped, and fully integrated within ALPS Aerospace:
 - Worldwide fleet data
 - Historic airline losses
 - Aircraft route data



ALPS Aerospace – Airline Loss Simulation

- Outline simulation logic
 - User defined mapping of airlines to frequency zones.
 - User selected loss frequency for each zone.
- For each event simulated select an aircraft from the fleet from the frequency zone and build up the loss amount:
 - Hull value derived from fleet data.
 - Passenger liability calculated from seating configuration, passenger load, fatality rate, and liability awards dependent on route structure.
 - Third party liability generated.
 - Engine and frame manufacturer liability contributions simulated.
 - If clash event generated process repeated for second aircraft.



ALPS Aerospace – Pricing

- User selects risk to be priced: direct, treaty reinsurance, or retrocession. Framework ensures a consistent approach to all acceptance methods.
- Event set is either user defined or generated by the ALPS simulation engine and processed through a risk to deliver the following statistics:
 - Trigger point
 - Worst burn
 - Expected burn
 - Standard deviation
 - Expenses
 - Reinstatement %
 - Cost of capital
 - Net premium
 - Expected reinstatement
 - Rate on line (ROL)
- Expenses, cost of capital, premium and rate on line calculated using user defined assumptions.
- Premium calculation can be done using either a target loss ratio or target return on capital.



ALPS Aerospace – Pricing

- Pricing results summary screenshot:

- Direct Pricing

Sections Results

Level Summary Scenarios Layer Events

Sctn	Unit of Cover	Trigger Point	Worst Burn	Cvrs	Expected Burn	Std Dev	Expenses	Reinst%	Cost of Capital	Net Premium	Expected Reinst	Net ROL	R.O.L.
All	1,915,000,000	0	1,845,658,782	1	78,679,125	255,790,489	7,867,913	0.00%	98,882,193	178,111,398	0	9.30%	9.30%
1	165,000,000	0	122,440,900	1	10,947,202	45,595,609	1,094,720	0.00%	6,239,314	17,143,802	0	10.39%	10.39%
2	1,750,000,000	0	1,750,000,000	2	67,731,923	246,966,085	6,773,192	0.00%	94,141,636	162,362,674	0	9.28%	9.28%

- Treaty Pricing

Results

Level Summary Scenarios Layer Events

Lyr	Unit of Cover	Trigger Point	Worst Burn	Cvrs	Expected Burn	Std Dev	Expenses	Reinst%	Cost of Capital	Net Premium	Expected Reinst	Net ROL	R.O.L.
All	110,000,000	209,822,628	86,561,633	1	2,367,031	9,244,628	236,703	100.00%	1,413,254	3,932,370	84,604	3.57%	3.93%
1	12,500,000	209,822,628	20,020,438	2	1,355,245	3,424,706	135,525	100.00%	283,338	1,600,574	173,436	12.80%	14.09%
2	25,000,000	494,697,862	25,000,000	2	573,964	3,389,364	57,396	100.00%	407,928	1,015,963	23,319	4.06%	4.47%
3	32,500,000	1,485,568,488	32,500,000	2	353,934	3,095,327	35,393	100.00%	543,704	922,979	10,049	2.84%	3.12%
4	40,000,000	3,630,865,204	16,561,633	1	83,888	1,449,797	8,389	100.00%	284,128	375,617	793	0.94%	1.03%

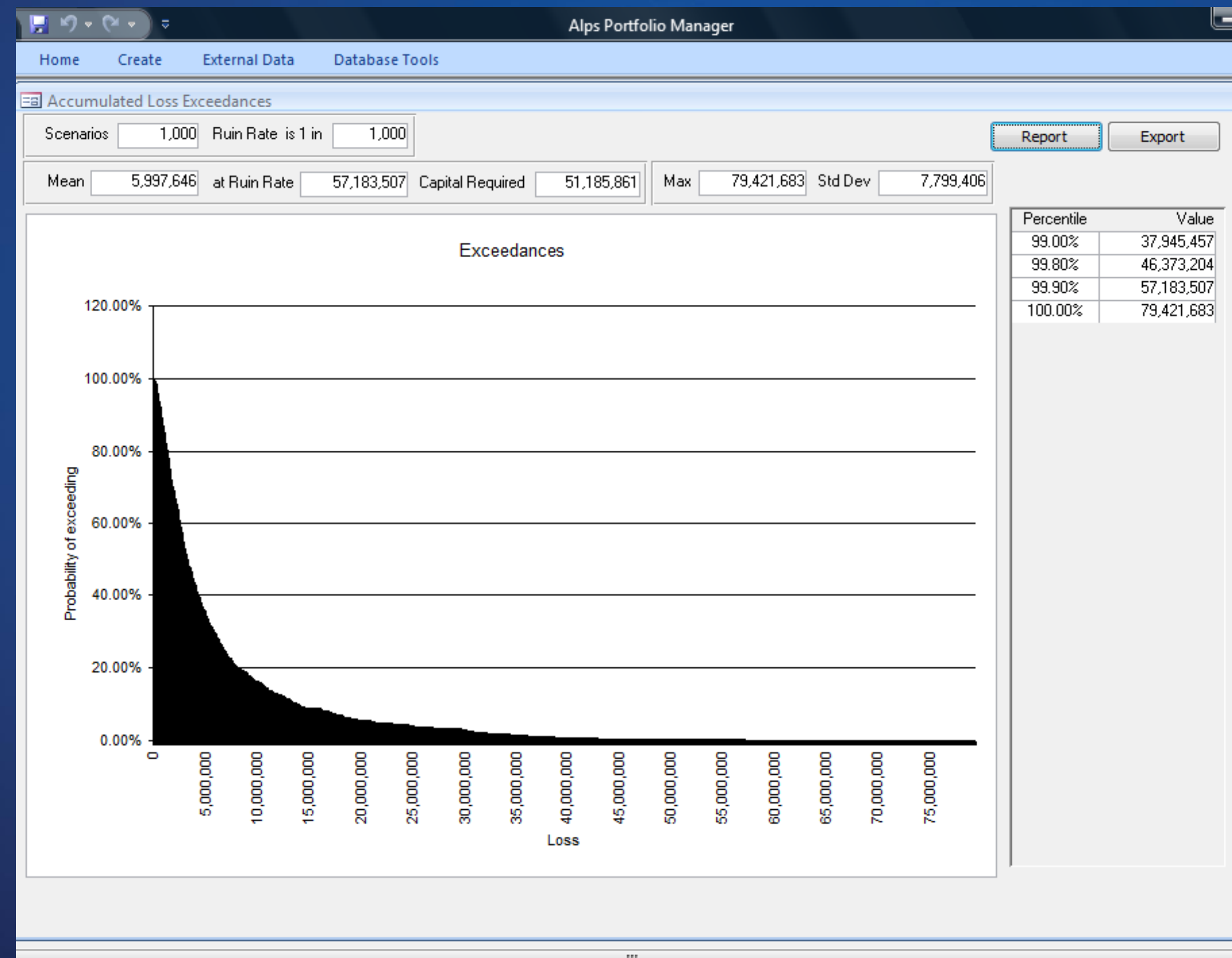
ALPS Aerospace – Portfolio Analysis

- Event set is either user defined or generated by the ALPS simulation engine, is now processed through the entire aviation portfolio.
- ALPS calculates the following statistics for the entire portfolio, for accumulated loss and highest individual loss:
 - Mean loss
 - Ruin loss
 - Capital required
 - Maximum loss
 - Standard deviation
 - Loss percentiles



ALPS Aerospace – Portfolio Analysis

- Results screenshot:



ALPS Aerospace – Benefits

- Better understanding of assumed and ceded risk
- Better understanding of underlying risk prior to capital commitment
- Ensures efficient use of capital leading to improved underwriting results
- Ensures timely and consistent information on exposure
- Valid logic integrated within the underwriting process reduces operational risk
- Improves quality of risk management across specialty classes



Thank you