

The 2018 EPIC Workshop for Electric Propulsion

USING INSURANCE TO IMPROVE COMPETIVENESS



# THE ROLE OF INSURANCE

- Insurance supports innovation by taking on those risks which ventures, especially new ventures, are unable or unwilling to retain
- Insurance works through making specific risks part of the 'common pool' where the many pay for the losses of the few
- Insurance enables financiers to feel comfortable about the risks taken by their investments and hence enables investment
- Insurance works best when the common pool is large and growing – so insurers will naturally want to support new business and new risk classes, growing and diversifying the common pool

INSURANCE ENABLES

# DO INSURERS UNDERSTAND?

- Insurance Underwriters and Brokers often have engineering background and/or employ engineers
- We typically have long experience in the industry and a wide commercial awareness
- We have seen many different designs, strengths and weaknesses across a broad spectrum of space technology. We are intimately familiar with failures.
- Most if not all are passionate about space and the technology
- **However: We can not remain current on new technology**
- We always want to learn – improved understanding means better cover and lower premiums

UNDERSTANDING TECHNICAL RISK IS KEY

# ELECTRIC PROPULSION AS A FRIEND

- Improved lifetime margins possible without exorbitant mass penalties
- Reduced complexity propulsion system
- Possibility to implement redundancy relatively easily

ELECTRIC PROPULSION HAS A LOT OF PROMISE



# ELECTRIC PROPULSION AS A FOE

- Increased reliance on the power subsystem which historically has been a source of failures
- Low thrust may be insufficient for fallback/emergency manoeuvres
- New technology may have less heritage and lower demonstrated reliability
- Mass savings on propulsion redeployed to complex payloads and increasingly complex missions with reduced flight heritage
- Potentially poorly understood effects, e.g. plume impingement, surface charging etc.

ELECTRIC PROPULSION CHALLENGES RISK PERCEPTION

# ELECTRIC PROPULSION EXPERIENCE - I

Based on events caused by the Propulsion subsystem

	90-94	95-99	00-04	05-09	10-14	15-17	Since 1990
In-Orbit years launched	2,839	10,128	6,237	3,797	2,409	754	26,165
Of which with EP	29	737	832	410	172	81	2,260
<i>Proportion</i>	1%	7%	13%	11%	7%	11%	9%
Insurance losses	13	146	991	-	48	390	1,587
Of which with EP	-	-	240	-	-	-	240
<i>Proportion</i>	0%	0%	24%	0%	0%	0%	15%
Capacity lost	0.80	10.81	3.75	0.40	5.10	-	20.86
Of which with EP	-	0.20	-	0.20	0.90	-	1.30
<i>Proportion</i>	0%	2%	0%	0%	18%	0%	6%
Lifetime lost	0.18	4.54	2.34	-	0.24	1.39	8.68
Of which with EP	-	2.32	1.20	-	-	-	3.52
<i>Proportion</i>	0%	51%	51%	0%	0%	0%	41%

Source: Seradata Spacetrak

# ELECTRIC PROPULSION EXPERIENCE - II

Based on all satellites, all events

	90-94	95-99	00-04	05-09	10-14	15-17	Since 1990
In-Orbit years launched	2,839	10,128	6,237	3,797	2,409	754	26,165
Of which with EP	29	737	832	410	172	81	2,260
<i>Proportion</i>	<i>1%</i>	<i>7%</i>	<i>13%</i>	<i>11%</i>	<i>7%</i>	<i>11%</i>	<i>9%</i>
Insurance losses	1,067	4,602	3,992	1,783	2,857	977	15,277
Of which with EP	-	544	763	304	244	124	1,979
<i>Proportion</i>	<i>0%</i>	<i>12%</i>	<i>19%</i>	<i>17%</i>	<i>9%</i>	<i>13%</i>	<i>13%</i>
Capacity lost	71.31	220.77	98.95	106.04	103.57	31.72	632.36
Of which with EP	1.97	5.48	8.02	3.96	2.44	1.30	23.16
<i>Proportion</i>	<i>3%</i>	<i>2%</i>	<i>8%</i>	<i>4%</i>	<i>2%</i>	<i>4%</i>	<i>4%</i>
Lifetime lost	0.28	8.76	5.62	2.55	3.50	1.42	22.13
Of which with EP	-	1.16	1.14	0.40	0.71	0.02	3.43
<i>Proportion</i>	<i>0%</i>	<i>13%</i>	<i>20%</i>	<i>16%</i>	<i>20%</i>	<i>1%</i>	<i>15%</i>

Source: Seradata Spacetrak

- There is a growing 'coverage gap', where Global GDP grows faster than global premium -> the proportion of risks covered is decreasing
- Low interest rate environment mean much reduced investment income -> insurers are becoming more dependant on underwriting results
- Increased globalisation and interdependencies may lead to loss accumulation and poor diversity, increased cost of capital
- Pressure on overheads as margins are reduced
- Diversification and product development seen as key to increase income, reduce volatility, increase return on capital

IF ELECTRIC PROPULSION CAN DELIVER ON THE LAST POINT...



# WHAT INSURERS WOULD LIKE

- To develop and maintain an understanding of the new technologies as they emerge
- To understand the wider impact on the system in which they are installed
- To develop coverage conditions to ensure that the insureds are covered for the actual risks faced by them
- To propose risk transfer solutions not only to launch and satellite operators, but also to manufacturers, integrators, investors ...

WE WANT TO CONTRIBUTE TO NEW TECHNOLOGY IMPLEMENTATION



# GETTING THE BEST FROM YOUR INSURER

- A principle of insurance is 'uberrima fides' – utmost good faith. This is reciprocal - insurers should and need to trust their insureds – and vice versa.
- This trust is best nurtured through frequent contact and open exchanges
- Improved understanding of technical risks means lower uncertainty and a fairer premium
- Improved understanding of actual exposure faced by the insureds mean a cover better suited to their needs
- Insurers may be able to propose risk mitigation solutions outside traditional ones to protect not just the assets but also the business plan
- Improved risk management will help competitiveness

INVOLVE YOUR INSURERS EARLY IN A PROJECT



# CLOSING REMARKS

- Workshops like EPIC are extremely useful to insurers as it allows us to maintain an understanding of new and emerging technologies
- Insurers want to engage with industry to ensure that we can provide the right product at the right price
- We genuinely want to support new technology and broaden the missions possible in space
- This is not purely altruistic - we also hope to create income from this – but we are involved in the space market because we are genuinely enthusiastic about it
- We love a challenge!

TALK TO US!



Managing Director

M: +44 (0) 7983 531 161

E: [morten.pahle@volanteglobal.com](mailto:morten.pahle@volanteglobal.com)

AESIR  
SPACE

*a member of the Volante Global Group of Companies*

Copyright © Volante International Limited 2018.

Aesir Space is a trading name of Volante International Limited (“VIL”) a company incorporated under the laws of England & Wales with registered number 11005928 and whose registered office is 20 St Dunstan’s Hill, 5th Floor, London, EC3R 8HL. VIL is an Appointed Representative of Vibe MGA Management Ltd which is authorised and regulated by the Financial Conduct Authority.

This document, the presentation to which it relates and all data, information and all other contents or materials contained in it were intended and prepared for general information and discussion purposes only, and do not create any obligations on the part of VIL, its parent, subsidiary or affiliated undertakings.

