

PREFACE v
Aviation Has Been My Life v
Why Did I Write This Book? v
Why Two Volumes vi
Standard Disclaimers vi
Political Correctness vii
Dedication vii
It's Been a Grand Flight so Far vii

CHAPTER 1 *6 Radios, 2 Choppers, No Communication = Mid-Air)* **1**

Setting the Stage 1
Long Transits 1
So What Went Wrong? 2

CHAPTER 2 *We Must Have Hit an Unlit Crane* **7**

“We must have Hit an Unlit Crane...” 7
Determining the Cause 8
Flight Manual Limitation 8
A Spotty History 9
New to Glass Cockpits 9
Assembling the Pieces 10
Still a Puzzle 10
A Workable Scenario 11
The Summation 12
Postscript 16

CHAPTER 3 *An Unsolved Acciden)t* **17**

Radar Data Fight Path 17
Climb 17
Everything Looks OK up to Now 18
Glide Path Interception 18
Final Minute of Flight 19
What If Pitch Channel Runs Out of Authority? 20
No Radio Calls 20

Mystery Remains 21

CHAPTER 4 *Runaway Servo- in Cloud* 25

A Simple Flight Turns Deadly 25
Inspecting the Wreckage 25
Details and Clues 26
The Heart of the Matter 26
Comparing to a Playground Merry-Go-Round 27
No Chance of Recovery 28
Lesson Re-Informed 28

CHAPTER 5 *The Board of Inquiry Missed The Cause)* 33

Original Military Accident Investigation 33
Lynx Rotor System 33
Board of Inquiry 34
Pretty Puzzled 35
Vortex Ring State was the Culprit 36

CHAPTER 6 *Data and Wreckage Doesn't Lie* 43

First Indications of Trouble 43
Look at the Physics 43
Look at the Geometry 44
Things Get Stranger 44
How Could This Happen? 45
From the Engine Expert... 46
What Really Happened? 46
How Did the NTSB Arrive at Their Conclusion? 47

CHAPTER 7 *Follow Me if you Want to Crash* 51

Why Did the Flight Even Take Place? 51
Probing More Deeply 52
Aim of the Flight 52
The Big Picture Emerges 53

CHAPTER 8	<i>Cause and Effect</i>	57
	Setting the Stager- Hot, High and Heavy	57
	Putting The Facts Together	57
	What Really Happened?	58
	Why Highlight This Crash?	59
CHAPTER 9	<i>A Quiet but Dark Night)</i>	61
CHAPTER 10	<i>Water in the Fuel Tank</i>	63
	At The Inquest	63
	Meeting the Head Of the Inquiry	63
	What's the moral?	66
CHAPTER 11	<i>Only Slightly Overloaded)</i>	71
	Newly Minted Commercial Pilot	71
	Couldn't Hover at Takeoff and now	71
	Assumed Standard Weight, Ignored Physical Evidence	72
CHAPTER 12	<i>Know and Use Your Autopilot</i>	75
	Autopilot Modes	75
	A Gotcha Feature (or Bug?)	76
	Two Complicating' Features'	76
	Situational Awareness	77
	Things Get Worse	78
CHAPTER 13	<i>An Impossible Failure Happens - Twice</i>	81
	Details	81
	It happened Before- to this machine	81
	Complex, Old Electrical System	82
	Lightning Generates Electrical Pulse, Not just Lightning	83
	No Electrical Power	84
	Moral of the Story	84

CHAPTER 14 *NightStalkers Come in From the Dark* **85**

- Some History **85**
- Getting to be a member **85**
- Getting In As A Pilot **86**
- Psychological Testing **87**
- Training Starts **88**
- Long Mission Times **89**
- Maintenance **90**
- Managing the Fleet **91**
- No Patches, No Prima Donnas **91**

CHAPTER 15 *MH-60K Pilot Evaluation* **95**

- Properly Equipped **95**
- Pre-Flight - 57 Aerials, bumps and bulges **96**
- Detailed Walkaround **97**
- Very Busy Cockpit **97**
- Firing up the Beast **98**
- Into the Air **99**
- Basic Airframe Handling **99**
- Looking at the Magic **100**
- Following the Flight Director **101**
- Adventures in the Simulator **102**
- Out to Sea **102**
- Basket Strikes and PIO **103**
- Night, Mountains, Fog, 100' AGL **104**
- A Severe Case of Helmet Fire **105**
- Overall Impressions **106**

CHAPTER 16 *The MH-47E- An Assault Helicopter?* **109**

- Somewhere, sometime... **109**
- Back to Liberality **110**
- The Walkaround **111**
- Interior **112**
- Back to the Simulator **113**

Startup 114
Hover 114
Engage the Autopilot 115
Using the Magic 116
Critiquing the Displays 116

CHAPTER 17 *Old, but Not Tired Marine CH-34* **121**

An Invitation not to be Refused 121
Viet Cong Modifications 122
Mountain Climbing Complete 123
Strapped in and briefed, we were ready to go. 123
Airborne 124
How Far We have Come! 124

CHAPTER 18 *First-Hand Look at Mil Design Bureau* **127**

Range Of Machines and Records Held 127
Flight Test Facility 128
Four Mi-28 Prototypes 129
Separate production 130
The Rostov Factory 130
The blade shop 131
Overall impression 132

CHAPTER 19 *Two Russian Helicopter Leaders* **135**

Differences Between Russian and Western Design 135
Differences Between Civil and Military Designs 136
Karapetian Interview 137
Problems Encountered 138

CHAPTER 20 *Mi-35 Update* **141**

Background 141
Shaving weight 141
New potency 142

CHAPTER 21	<i>Mi-34 Story)</i>	145
	Two Senior Engineers	145
	Customers in Russia are Different	146
	Time Between Overhaul	147
	<i>What Should Western Designers Consider</i>	148
	Turning to Mi-34	148
CHAPTER 22	<i>Mi-28 Pilot Front Seat Report</i>	153
	Filled with test equipment	153
	Harnesses and a chute	154
	Lighting the fires	155
	Observing From The Front Seat	156
	A full card	157
CHAPTER 23	<i>Mi-26 Pilot Evaluation)</i>	161
	Getting to Russia	161
	Rostov Factory	162
	Into the Cockpit	162
	Start up For Ground Run	163
	Russia-normal' Practice	164
	The Real Flight	165
	Hovering a Beast	166
	Into the Wild Russian Yonder	167
	Autopilot Altitude Hold	168
	AFCS Off	168
	A Quiet Machine	169
	Traffic Patterns and a Running Landing	169
	Shut Down	170
	An Apo.logy For No Weight	171
CHAPTER 24	<i>Mi-17 Pilot Report</i>	177
	Language Issues	177
	Improved Mi-8	177

Business-Like Appearance	178
Field of View	178
No color coding	179
An interesting cultural difference.	179
Starting	180
High control forces	181
Hovering	181
Forward Flight	182
Turning the AFCS off	183
An upset engineer	183
Low Level Whazzing	184
A Real, No Chance Of a Power Recovery Autorotation	184
Shut Down	185
Overall Impressions	186
Statistics	186

CHAPTER 25 *KA-32 Pilot Evaluation)* **191**

Canadian Certification	191
VIH Perspective	191
Flight Data Recorder	192
A Climb-Around	193
Into the Cockpit	194
Taxiing and Hovering	195
Forward Flight	195
Great for Vertical Reference	196
Simulated Engine Failures	196
Summary	197

CHAPTER 26 *PZL Swidnik W-3 Flight Evaluation)* **205**

Background	205
Walkaround	205
Cockpit	206
Flight	208
Engines	209
Back to Flying	211

Miscellaneous Systems 212
Flight Manual 212
Overall Impressions 213

CHAPTER 27 *A129 Mangusta (Mongoose)* 217

General overview 217
Setting up a Flight 218
Quick Systems Tour 219
Airborne 219
Touchdown and Liftoff 220
AFCS modes 221
Unusual Attitude Recovery 222
Systems 223
“Naked” night flight. 224
Impressive-and fun. 225
A129 International 225
Swiss Army Knife 226
Sighting 227
Quick Changes 228
T800 228
in-flight Operation 229

CHAPTER 28 *A129 International Version)* 233

Any Weapons Fit... 234
Gunslinger 235
Headache for Enemy Intelligence 235
T800 Engine 236

CHAPTER 29 *EH-101 Pilot Evaluation* 239

Briefing 239
Part of Certification Tests 240
Walkaround 241
Start Up 241
Ready to Lift 243

Simulated IFR 244
Slight Turbulence 245
More Electrical Systems Testing 245
AFCS Off 246
Low Noise Level 247
Coupled ILS 247
Shutdown 248
Overall Impression 249

CHAPTER 30 *Navy Lynx Upgrade)* **253**

Big program 253
External Changes 254
Integrated Avionics 256
Several Missions 256

CHAPTER 31 *Lynx Mk9 Pilot Report)* **261**

What can you do in 30 minutes to evaluate a helicopter? 261
What's New? 261
A familiar feeling 262
Yes, a difference 263
Heading out 264
Impressive Change 265
Ideal Flight 266

CHAPTER 32 *Its a Grande-A109S Pilot Report* **269**

A CLOSER LOOK 269
THE FLIGHT TEST 270
THE NUMBERS 272
THE TOUCHDOWN 273

CHAPTER 33 *Super Puma Pilot Report)* **279**

CHAPTER 34 *Rooivalk Pilot Report)* **291**

- Coffee and a briefing **291**
- Differences from final version **292**
- Start and Taxi **292**
- Hover **293**
- Forward flight **294**
- Flying without AFCS **295**
- Nap of the earth **295**
- Side and Rear Winds **296**
- Simulated engine failures **297**
- Overall impressions **298**

CHAPTER 35 *Rooivalk's Development)* **303**

- Design Philosophy **304**
- Systems Galore **304**
- Eyes Out of the Cockpit **305**
- Head Up Display **306**
- More Good Stuff **306**
- Pilot Head Tracker **307**
- Reducing Vulnerability **307**
- Bird Proof Plus **308**
- Front-Line Runaround **309**
- Using Surrogate Airframe For Systems Development **310**
- What's left to be done? **310**

CHAPTER 36 *Eagle Single)* **313**

- The Need **313**
- From the Outside **314**
- On the Inside **314**
- Return with us now to the Thrilling Days of Yesteryear **315**
- Nice Features **315**
- Looks Brand New **316**

Not Your Father's T-53 316

CHAPTER 37 *R-44 Raven II Pilot Report)* 321

What's new on the Raven II? 321

Talk with Top Folks 321

Time To Commit Aviation 322

Perfect California flying Weather 323

Failing Systems on Purpose 324

Engine Off Landings 325

Done Too Soon 326

Pilot or Policeman? 327

CHAPTER 38 *R-44 AFCS* 331

A Chance Conversation (or was it chance?) 331

What's it all about? 331

Only Two Buttons 333

But how well does it work, you ask. 333

Die Hard R-44 Pilots Will Love It 336

CHAPTER 39 *Dragon Fly Pilot Report)* 337

Size 337

Field of View 337

Turning rotors 338

Engine and rotor RPM Control 339

She's firm 339

Hovering 340

Flat-out flying 341

Autorotation with Power Recovery 342

Overall impressions 343

CHAPTER 40 *Company Behind DragonFly)* 347

Archeology! 347

Enter the Helicopter Experts 347

Simplicity is the Key **348**
The Engine **348**
High Payload Fraction **349**
Very Light Rotorcraft (LR) Certification **350**

CHAPTER 41 *Getting a Real Handle on Thing)s* **353**

Built to Handle **353**
What's Wrong With This Ship? **354**
A New Way of Thinking **355**
The People **357**

CHAPTER 42 *CAE's S-76C++ Simulator* **361**

The Machine **361**
Visual System **362**
Offshore Oil Rig! **363**

CHAPTER 43 *Bell 429 Pilot Report* **367**

A Disclaimer **367**
A Clean Slate **367**
First Helicopter with Maintenance Steering Group **368**
Taking a Closer Look **368**
In the Cockpit **370**
In Flight **371**
Forward Flight **372**
Bringing It In **373**

CHAPTER 44 *New Autopilot for Twin Huey)* **379**

An old dog can teach new tricks **379**
Background **379**
A Glass Cockpit and Autopilot **380**
Clear Displays **381**
Autopilot and Stabilization **382**

CHAPTER 45 *Venom Versatility)* **385**

- What They Would Show Me **386**
- A developmental tool **387**
- some Basic Questions **388**
- Being The Gunner **388**
- Air-To-Air **389**
- Tanks! **390**
- Then came virtual reality. **390**
- Flying The Simulator **390**
- More Tanks! **392**
- Peter Jones Program Manager Interview **392**

CHAPTER 46 *London's HEMS - More than a Helicopter)* **395**

- Background **395**
- Why a Helicopter? **395**
- Problems and Unique Aspects **396**
- Some Statistics **397**
- Working with the CAA and Others **397**
- Funding **398**
- More Mundane Problems **399**
- The Future **400**

CHAPTER 47 *Thomson's Light Helicopter Simulator* **403**

- Thomson's Solution **404**
- Blade Element Modeling **404**
- No-Motion, But Great Visuals **405**
- A Training Flight **406**
- Two-Dimensional Sheep **407**
- Summary **410**

CHAPTER 48 *St. Petersburg Aircraft Repair Center* **411**

- Smooth operations **412**

CHAPTER 49	<i>Advanced Rotorcraft Technology -Company Overview</i>	415
CHAPTER 50	<i>The Data will set you Free \</i>	421
	Brief History of FDR/CVR	421
	But what can you do with it?	424
CHAPTER 51	<i>Hymn of Flying Strain</i>	427
CHAPTER 52	<i>10 Commandments of Helicopter Flying</i>	429
CHAPTER 53	<i>Aircraft Flown</i>	431