

OPERATION HOPE:

The Case of the HK2803 and the 4 Missing Children in Colombia

Speaker: Humberto Hinestrosa – Rescue International
The Netherlands



Rescue International The Netherlands



Humboldt Rescue Organization Venezuela





Background





Flight Information:

On May 1st a community leader and a mother with her 4 children travel to **San Jose del Guaviare** from the indigenous community **Araracuara**.

The mother and her children were leaving the community to live with her husband near the capital. According to the husband, to escape from the guerrillas. According to the community, to escape punishment.

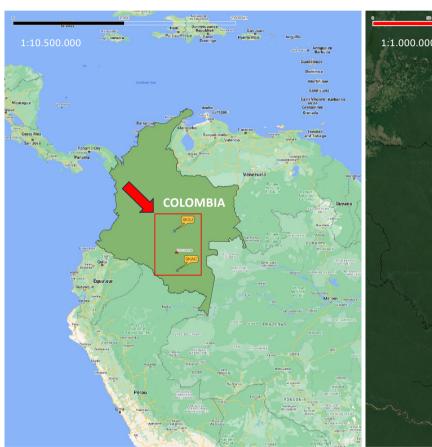
In similar incident, HK2803 lost engine power in 2021. Crashed in canopy.

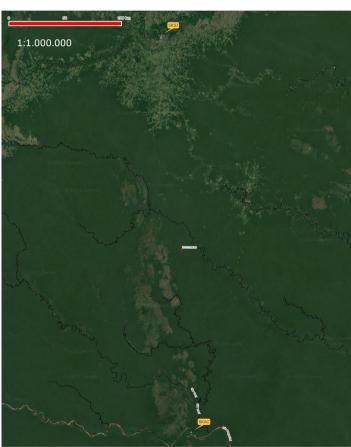




Background







Flight Information:

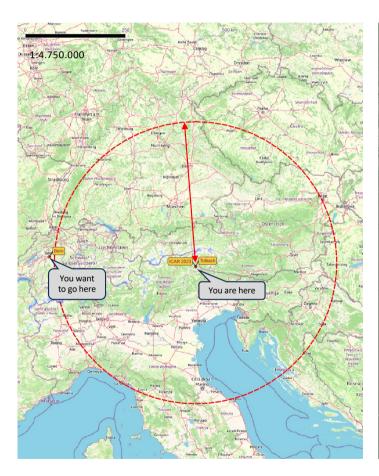
- Cessna U206G, HK2803
- Direct SKAC to SKSJ
- VFR flight
- POB: 07
- PAX: 06 (2 adults 4 children)
- Distance: 192nmi
- Takeoff: 01MAY23 06:42
 - (UTC11:42)
- Missing: 01MAY23 07:44
 - (UTC12:44)
- Found: 16MAY23

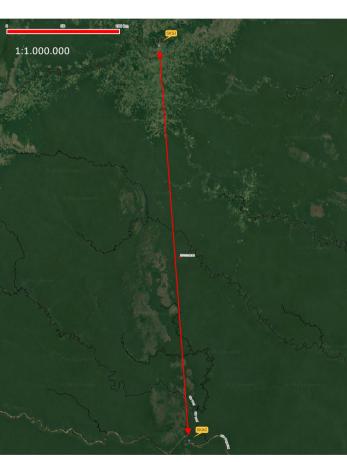




Background







Rescue International – All Rights Reserved – Tolbach 2023

Flight Information:

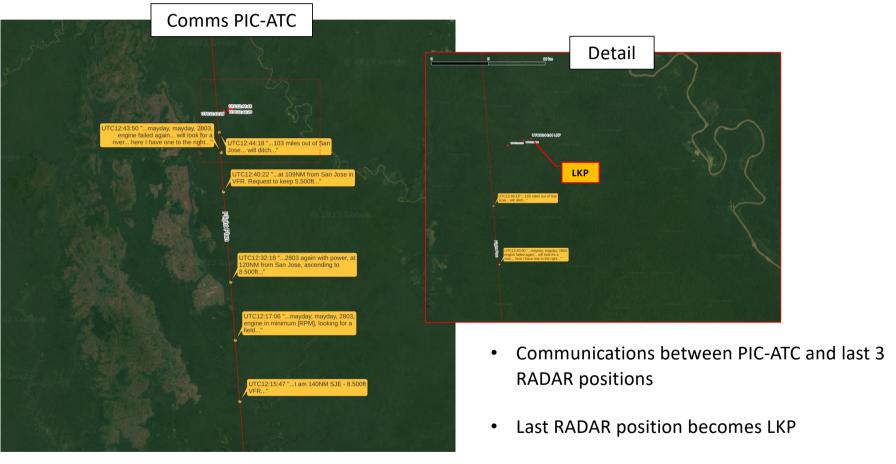
- Cessna U206G, HK2803
- Direct SKAC to SKSJ
- VFR flight
- POB: 07
- PAX: 06 (2 adults 4 children)
- Distance: 192nmi
- Takeoff: 01MAY23 06:42
 - (UTC11:42)
- Missing: 01MAY23 07:44
 - (UTC12:44)
- Found: 16MAY23





AEROCIVIL Search Efforts









RADAR - LKP

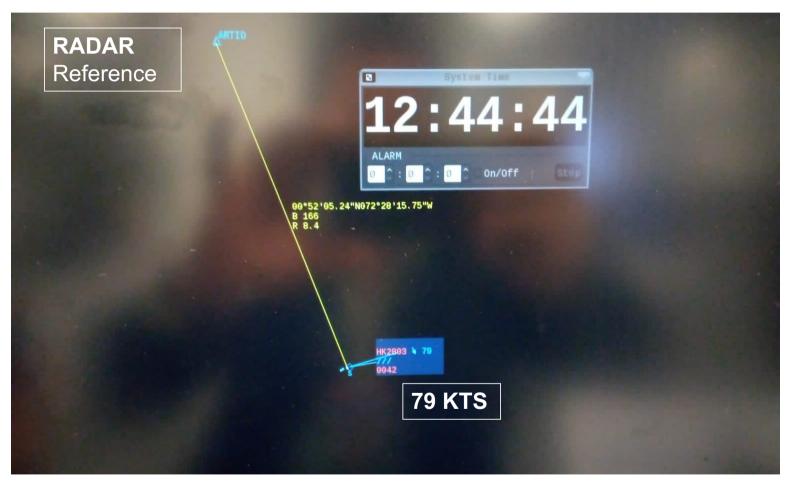






Last 3 RADAR positions

Last one became the LKP



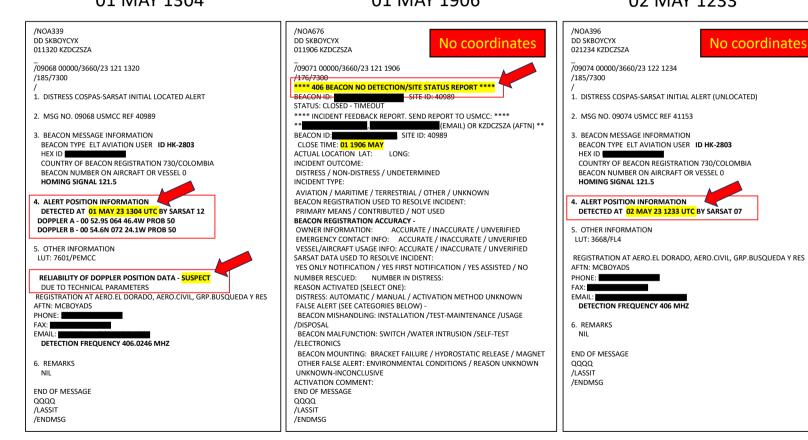
Rescue International – All Rights Reserved – Tolbach 2023

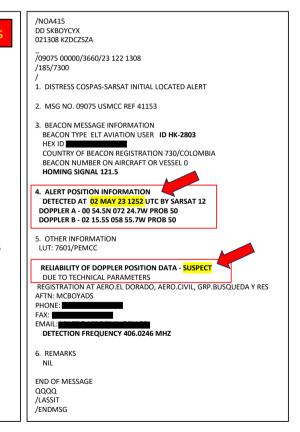


Emergency Locator Transmitter - ELT



Original distress message from **USMCC COSPAS-SARSAT**









AEROCIVIL Search

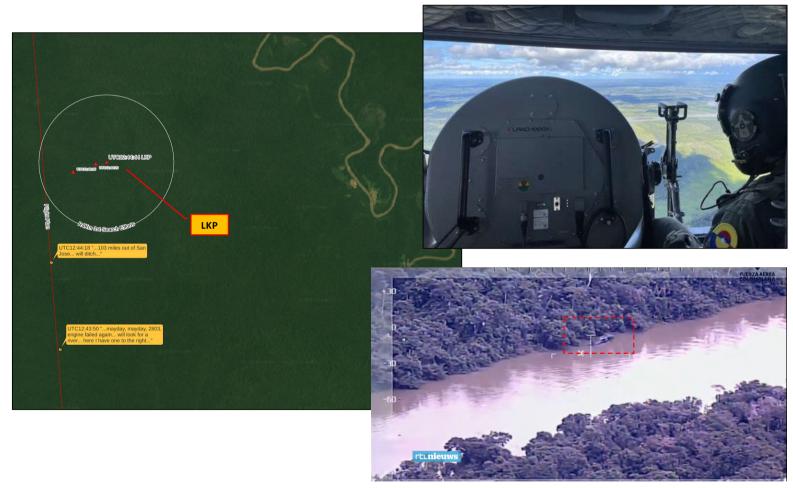


First search efforts are 4Km radius of LKP and specific locations

Days after, Airforce broadcast messages from helicopters

They indicate to:

"...approach the river [Apaporis] or generate some signal that can show your location..."

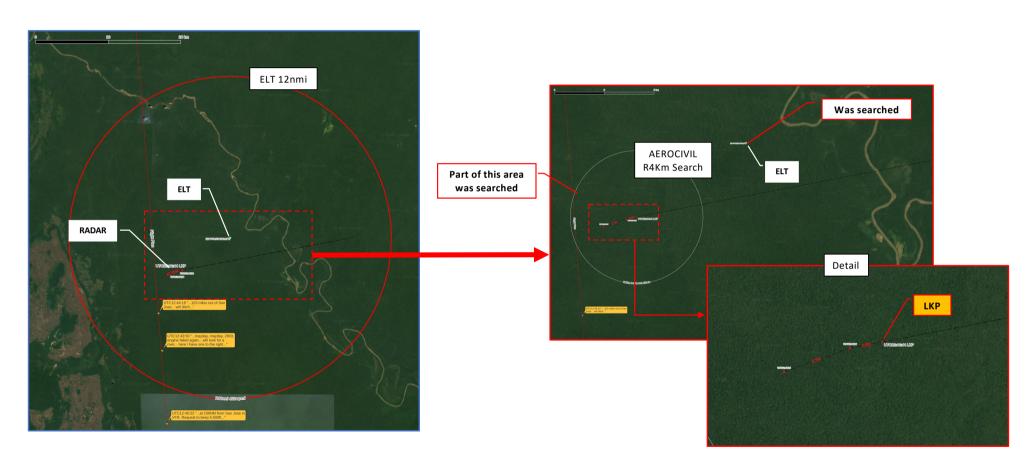






Last Course + ELT Default



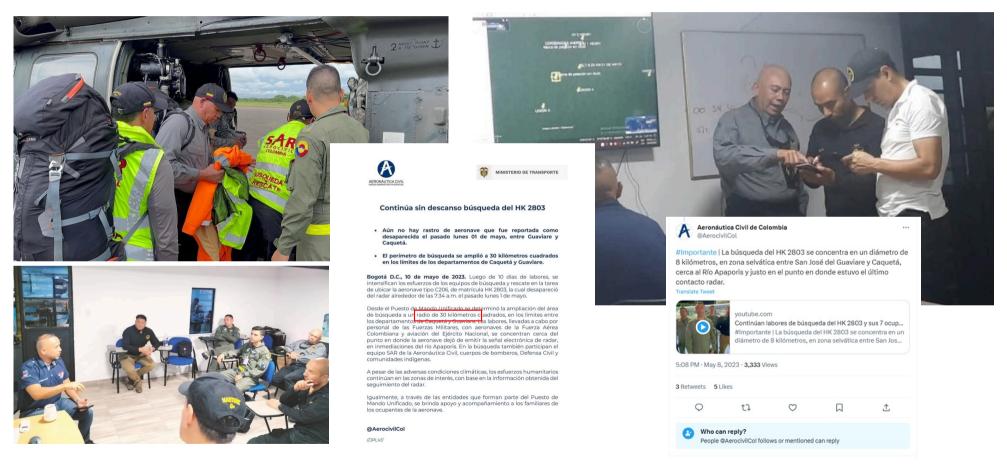






Search to be Expanded









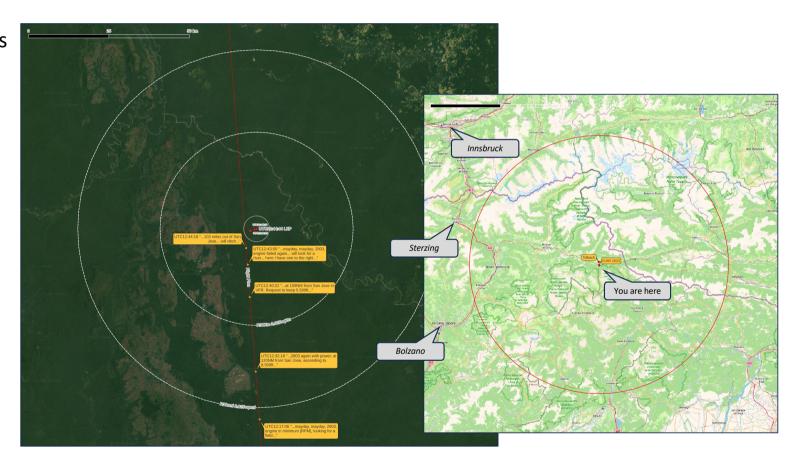
Search is Expanded



After 10 days search efforts are expanded to 30nmi radius of LKP

LKP and ELT signals were flown over without any results

POA is theoretically now 2.827sqnmi of dense Tropical Rainforest







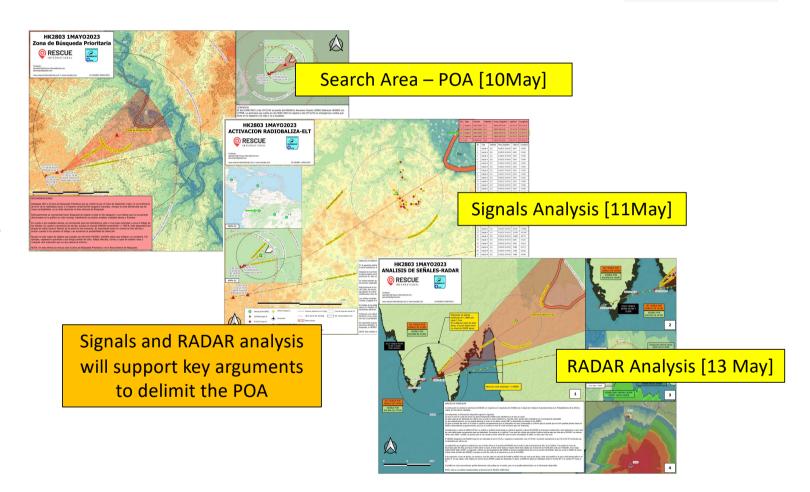
SAR Analysis Proposal



After request from authorities 3 analytic products were delivered, reaching key decisionmakers on 13 MAY 2023.

Via: Advisor LtCol. Fernando Mendoza and the head of Colombian SAR, Col. Juan José López Duque.

All arguments are **evidence and science based**. No opinions. No intuitions.

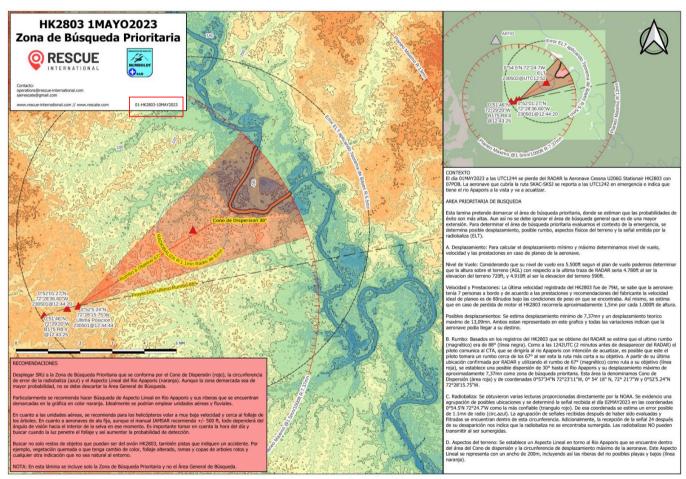






Analytic Product #1





Key points:

- Combines theoretical, statistical and deductive search planning methods.
- Analyzed information from different sources is merged.

Course 67° [deductive]

Radius 1.1nmi from ELT [bayes theorem, distance differentiation]

Dispersion 31° [statistical – ISRID/Lost Person Behavior]

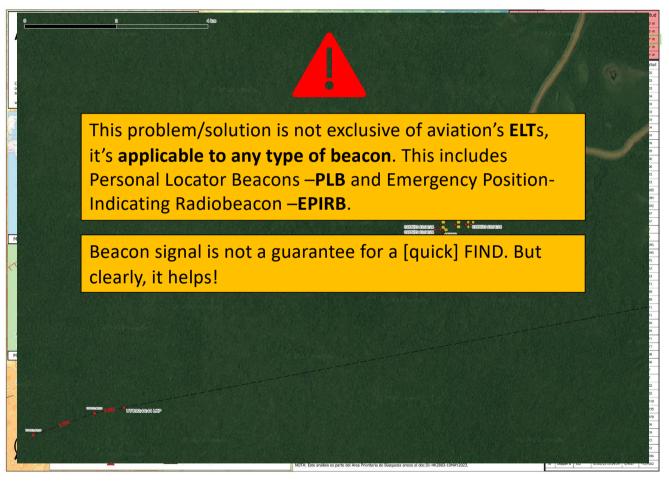
...and a lot of math and modeling!!!





Analytic Product #2





Key points:

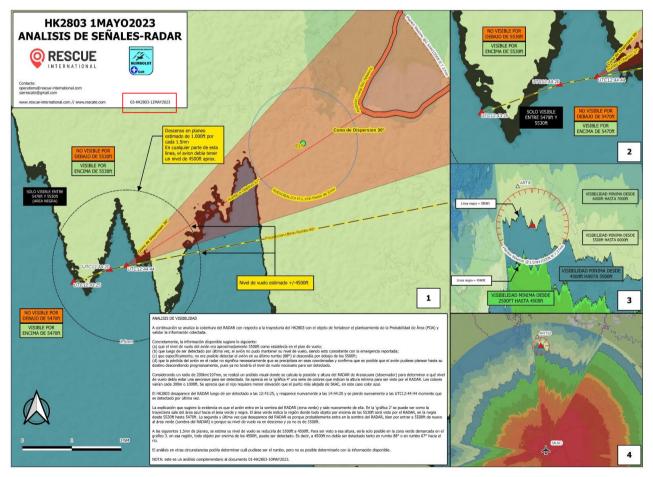
- Bayes theorem and a lot of math allows finding max distance and most probable area 5nmi 20% and 1.1nmi 80%
- Discard invalid coordinates of the system
- Determine grouping behavior
- Increase confidence and reducing the 12nmi threshold
- Eliminate ambiguity of the doppler signal





Analytic Product #3





Key points:

- Validates course 067° [this is the game-changer]
- Explains aircraft disappearingreappearing in RADAR
- Validates aircraft altitude AGL
- Validates main argument
- Increase confidence in RADAR signals





What is your POD here?





Some advice included:

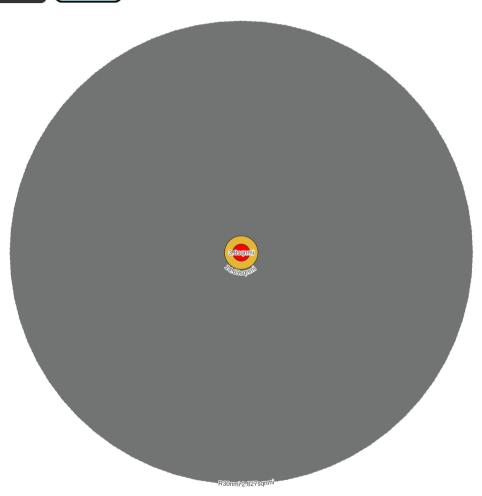
- Flight low and slow!
- Search during times sun penetrate foliage (sun at the zenith)
- Look for indications, most of the time the aircraft can't be seen or are destroyed
- Structured search
- SAR missions are different than military operations





POA Comparison





POA:

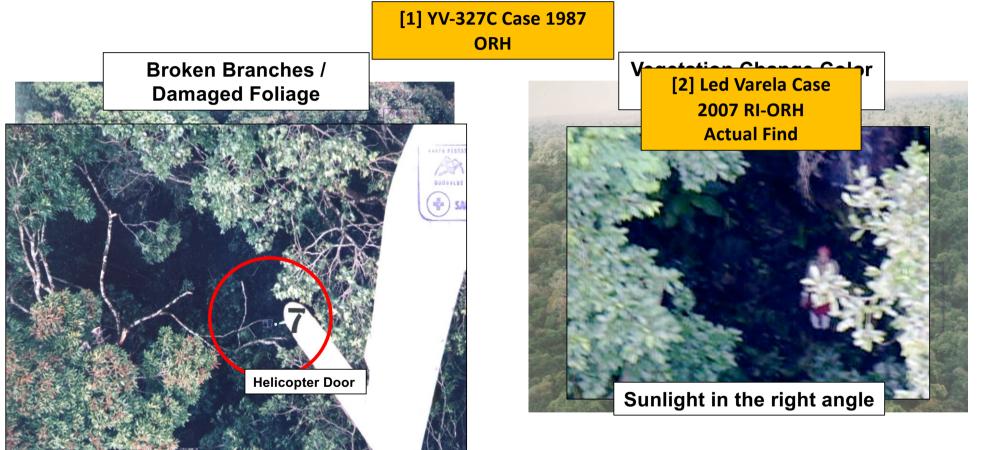
- SAR Analysis let us greatly reduce the POA
- Extending the search to R30nmi was not realistically possible to search
- Search resources would have been dispersed instead, instead they were concentrated in a feasible search area
- Red area fits 743,9 times in the gray area





Recommendations (previous cases)



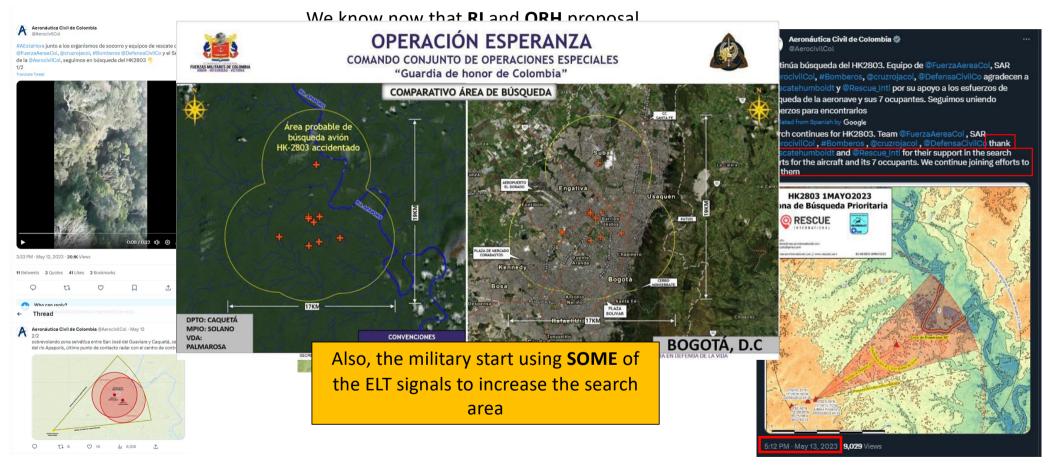






Twitter Diplomacy

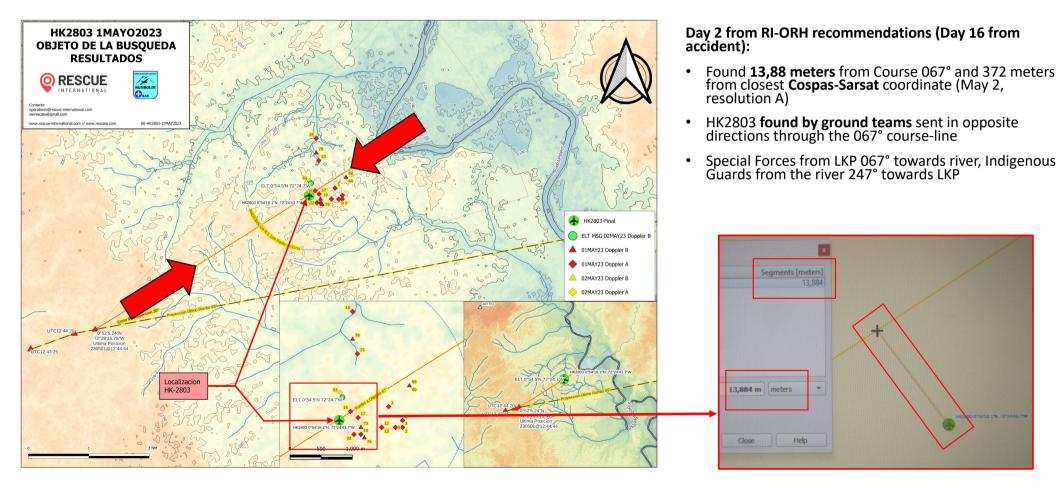










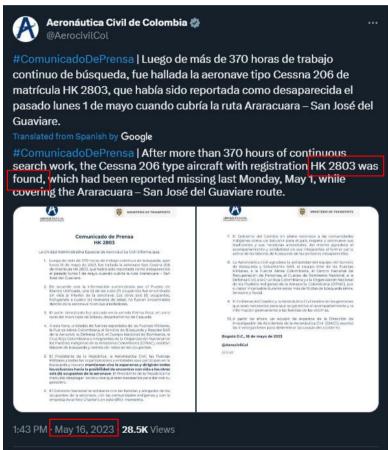












Day 2 from RI-ORH recommendations (Day 16 from accident):

- HK2803 found 13,88 meters from Course 067° and 372 meters from closest Cospas-Sarsat coordinate (May 2, res.A)
- HK2803 found by ground teams sent in opposite directions through the 067° course-line
- Special Forces from LKP 067°, Indigenous guard from the river 247°
- On 15 May Special Forces find the bottle
- On 16 May Indigenous Guards find the aircraft









Rescue International – All Rights Reserved – Tolbach 2023













Rescue International – All Rights Reserved – Tolbach 2023





HK2803 FIND: From the Air



Can you spot the HK2803?





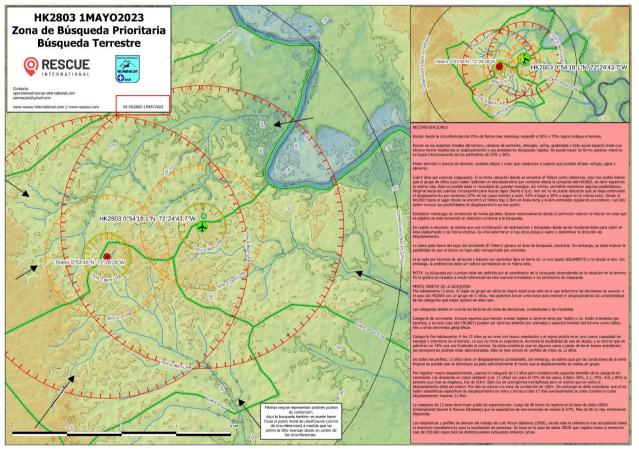


Rescue International – All Rights Reserved – Tolbach 2023









The Subject:

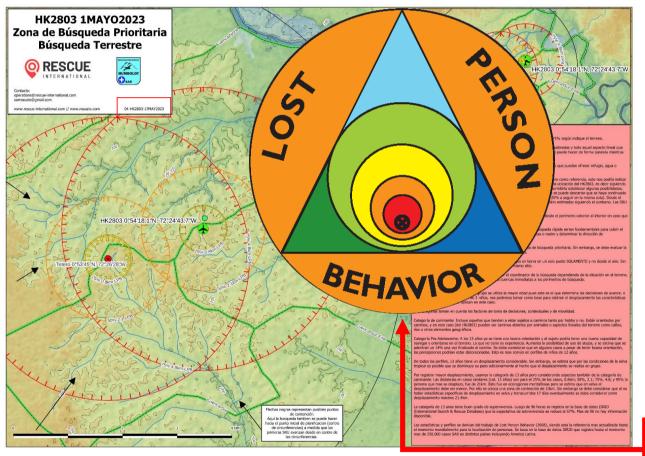
- A group of children aging 13, 9, 4 and 11 months: 13 becomes the dominant for profiling
- Unknown reasons for leaving the aircraft
- Known to be well familiarized with the forest
- Perhaps problematic family dynamics

Subject profile based on **Lost Person Behavior-ISRID**









Ground Search:

- A ground search plan is put in place by RI and ORH
- Now Special Forces Command takes the lead and full control of the operations
- Becomes world headline news (change in command structure)

Recommended actions:

- Trackers first
- Dynamic and fluid search
- Active and passive search methods
- Search linear features and paths of less resistance (LPB)
- Consider watershed/geographical containment
- Watershed search
- Supported in Lost Person Behavior profiles and findings









What was put in place:

- Most of the search was grid-line search (subject can re-enter search area)
- Initial progress was slow
- Derives in tracking [as a consequence]
- Indigenous communities join increasing manpower









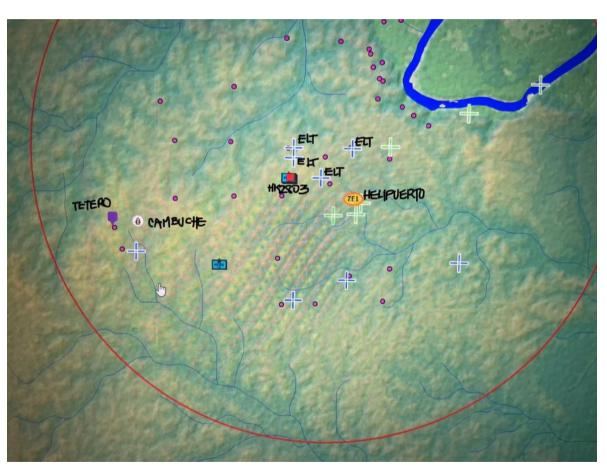
Other facts:

- Religious element was present and affected the search (+ and -)
- Weather was unfavorable [most of the time]
- Few 'Military' Search Dogs were deployed: one will be evacuated
- Later, 2 civilian search dogs join [1 rubble IRO test]; return 5 days later
- Search becomes a military operation led by military only
- Commissioning Satellite Imagery (FACh)









Clues continue to be found:

- Indicate the presence of the children and expectancy of life
- Objects were left and forgotten by the youngest
- Eaten fruits and seeds
- Indicate a path towards water source then downstream





Clues





Rescue International – All Rights Reserved – Tolbach 2023



Subject is Moving





Rescue International – All Rights Reserved – Tolbach 2023





Subject is Moving





Allegedly they followed mother's instructions to leave the crash-site

They needed to **find a water** source

Possibly the oldest was **afraid** of being punished for leaving the aircraft

Were children **scared** of the noise, helicopters, calls and activity?

Was their **family situation** an aspect that make them unresponsive to calls?







Children are Found

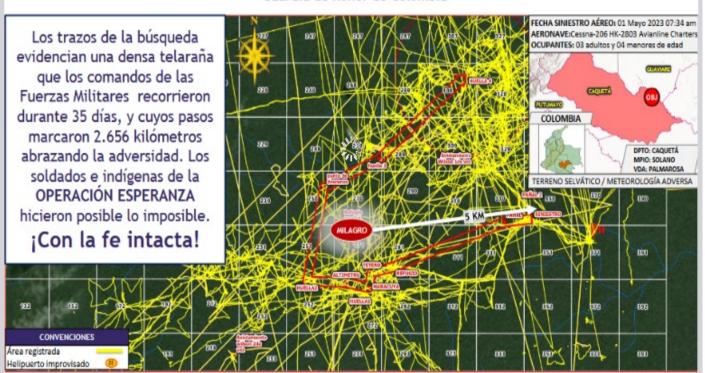




OPERACIÓN ESPERANZA

COMANDO CONJUNTO DE OPERACIONES ESPECIALES "Guardia de honor de Colombia"





Strategy:

- It takes a while until strategy changes to a more dynamic search
- Now recommendations were strictly followed
- Geography is now taken as a critical factor
- It is decided to cover linear features, from perimeter of watershed and from certain locations towards the streams including areas already searched using grid search





Children are Found





FIND:

- Four children are found alive 3,7Km from aircraft
- They survived on what the jungle provides, what they learned and a bag of tapioca flour that was in the aircraft
- They were found and approached in their native language
- They were malnourished and dehydrated, but without life threatening conditions

Yellow lines show the documented tracks

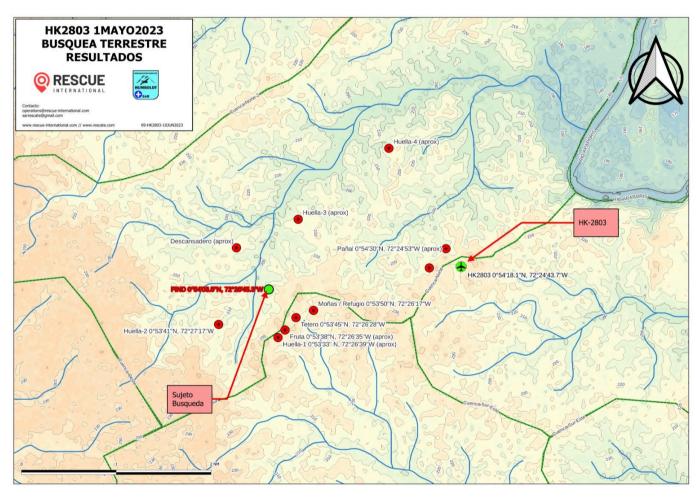
Rescue International – All Rights Reserved – Tolbach 2023





Find Location





Rescue International – All Rights Reserved – Tolbach 2023





K9 Deployments





Rescue International – All Rights Reserved – Tolbach 2023

Dogs are trained within the military forces:

- 4th Combat Air Group
- Escuela de Instrucción Canino Militar (ESCAM)
- Training in SAR, mainly rubble search
- Unknown capacities in Area Search
- No international certifications





K9 Deployments





Rescue International - All Rights Reserved - Tolbach 2023

Key facts:

- Only 2 military SAR dogs and 2 civilian SAR dogs deployed (volunteer)
- 1 military dog evacuated for health concerns
- Volunteer dogs evacuated after 5 days
- 1 dog missing (Wilson) search continued until 26 June
- Dog didn't alert (Wilson)
- Recall failed (Wilson)
- All missions involved helicopters
- No mantrailing or tracking dogs were used





K9 Deployments





Rescue International – All Rights Reserved – Tolbach 2023

Key facts:

- Wilson was never found
- He spent couple of days with the children, then left
- Search continued with reduced personnel for 2 weeks
- Dogs in heat, loudspeakers, food [including BBQ] and handler clothes were used for attraction
- No specific documentation



Considerations



- Know your capabilities: Ask for help! Big credit to the Colombian FF.MM.
- Same information can lead to different results SAR Analysis Value / Critical Thinking and SAR Intelligence approach
- Like ELT, PLBs may be encounter same difficulties as the case study (PLBs increase in popularity/Mountain Rescue)
- What is our capacity of homing a beacon or other RF signals?



Considerations



- Trust technology
- Trust the system (years of learning and experience of the SAR community)
- Take certifications. Certifications only make you and your K9 a better search team
- Vary your training: would your K9 have alerted the case-study subject?





Thanks for your attention!



OPERATION HOPE
JOINT SPECIAL OPERATIONS COMMAND
"Colombian Honor Guard"
Search Effort for HK-2803
Participating Entities



Any Questions?

Humberto Hinestrosa Rescue International The Netherlands

info@rescue-international.com www.rescue-international.com