

A HAB Sabbatical and Balloons with Hydrogen

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September 19, 2020

Fall 2019 Sabbatical

- *Goal was to visit others that do high altitude ballooning
- *Learn how they “do things,” exchange ideas
- *Make contacts
- *Particular interest in the use of hydrogen

Outline

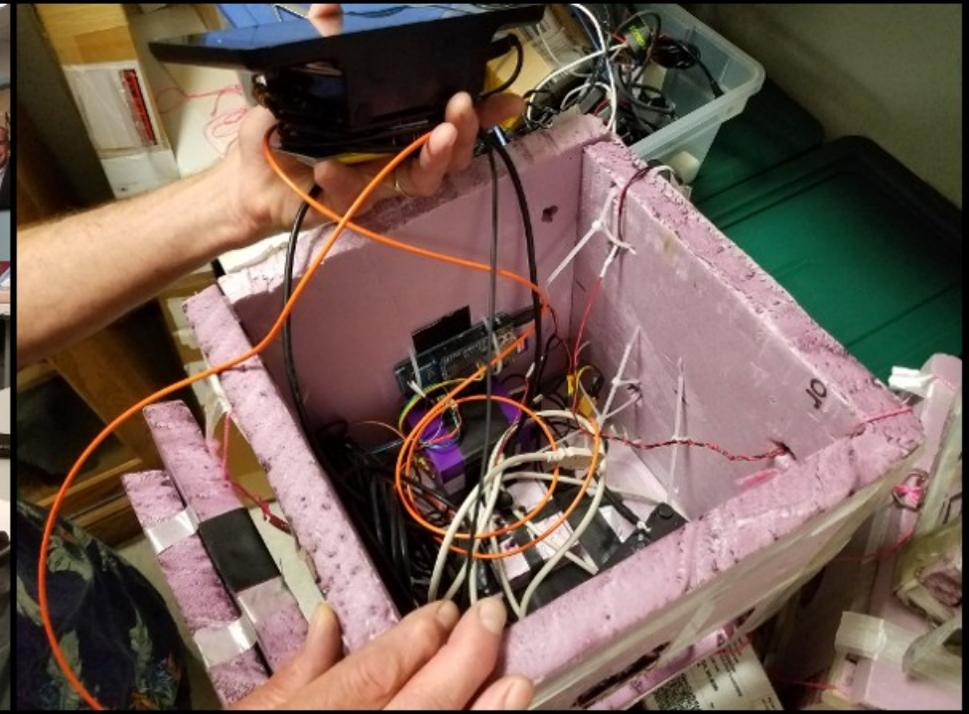
- *Brief overview of the sabbatical - three phases
- *New experience (for me) with the use of hydrogen

Part 1 USA/Canada

Stratostar
Noblesville, IN

AHAC 2019,
Iowa State
Ames Iowa

Gustavus
Adolphus College
St. Peter,
Minnesota



Canadian Side-trip

School HAB
teachers --
Winnipeg,
Manitoba



Night Crew Labs
Woodside, CA



JP Aerospace
Rancho Cordova,
CA



CNSP
Silicon Valley, CA

**Stanford
University**
Palo Alto, CA

NASA JPL
Pasadena, CA



UC Boulder
Boulder, CO



EOSS
Genoa, CO
launch



Part 2

Japan

Kikyu
Kawasaki, Japan



Part 3

Europe

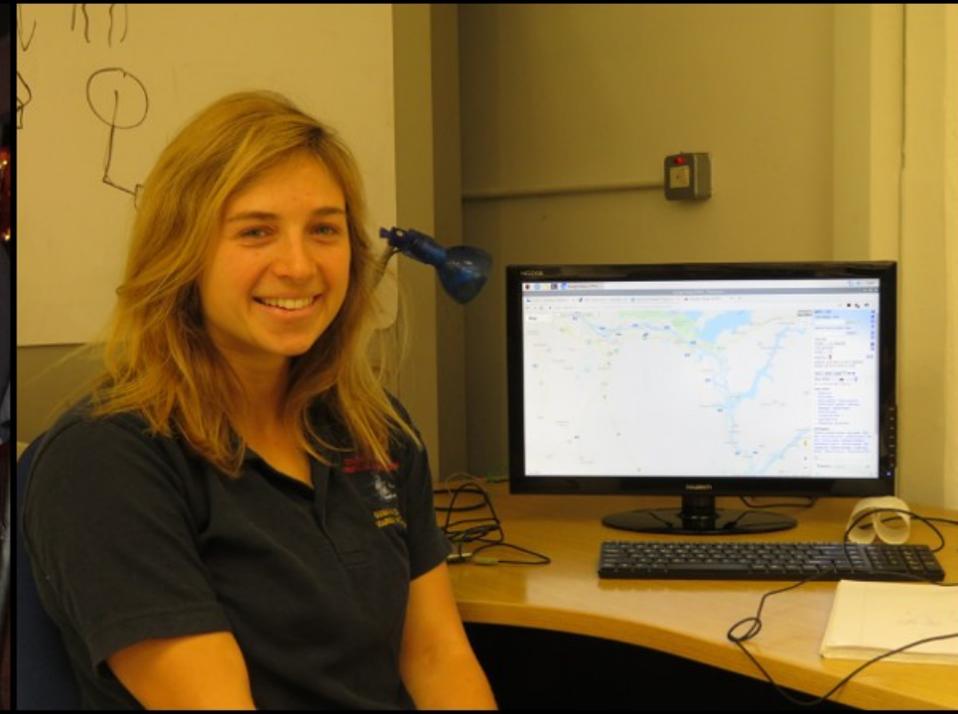
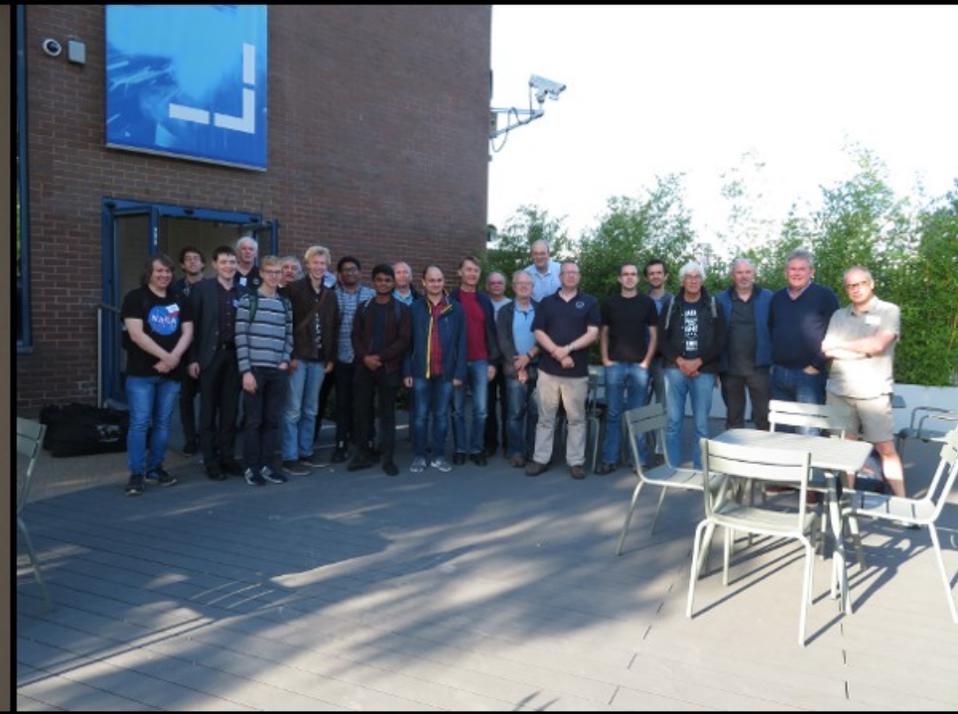
UKHAS

London, England

Traditional event
after conference

London, England

European
Astrotech, Ltd.
Aylesbury, UK



French Amateur Radio Operators that do HAB

Sylvie, F1PSH
Gaby, F5PSI
Christian



Alain, F6AGV

Roland, F5ZV
Andy, F5MVO



Poland

Tomasz, SP9UOB

HAB colleagues
Silesian University
of Technology



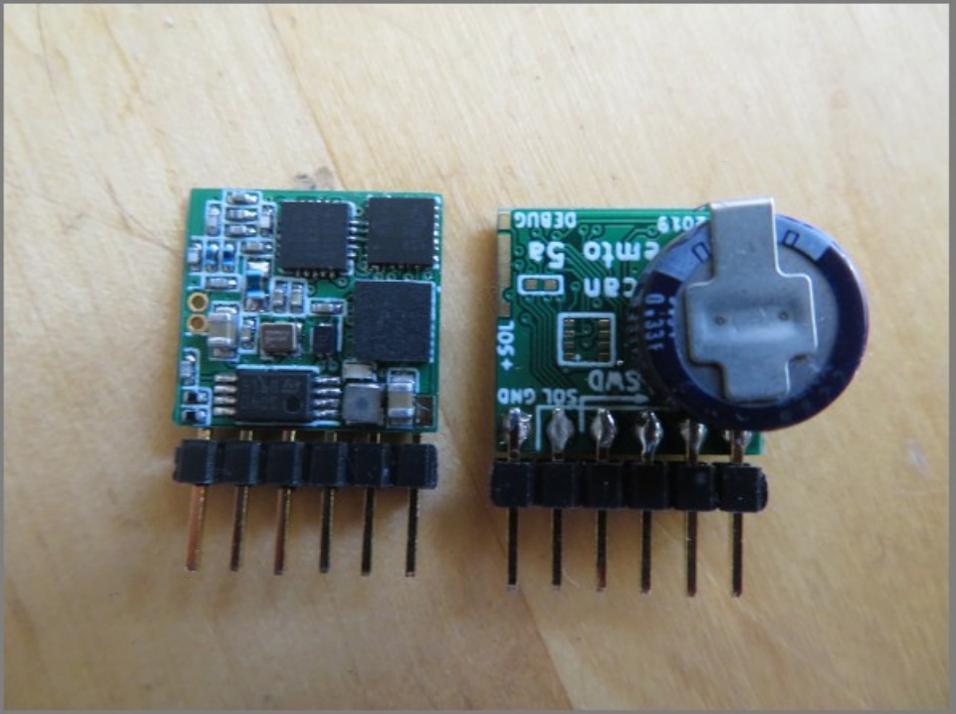
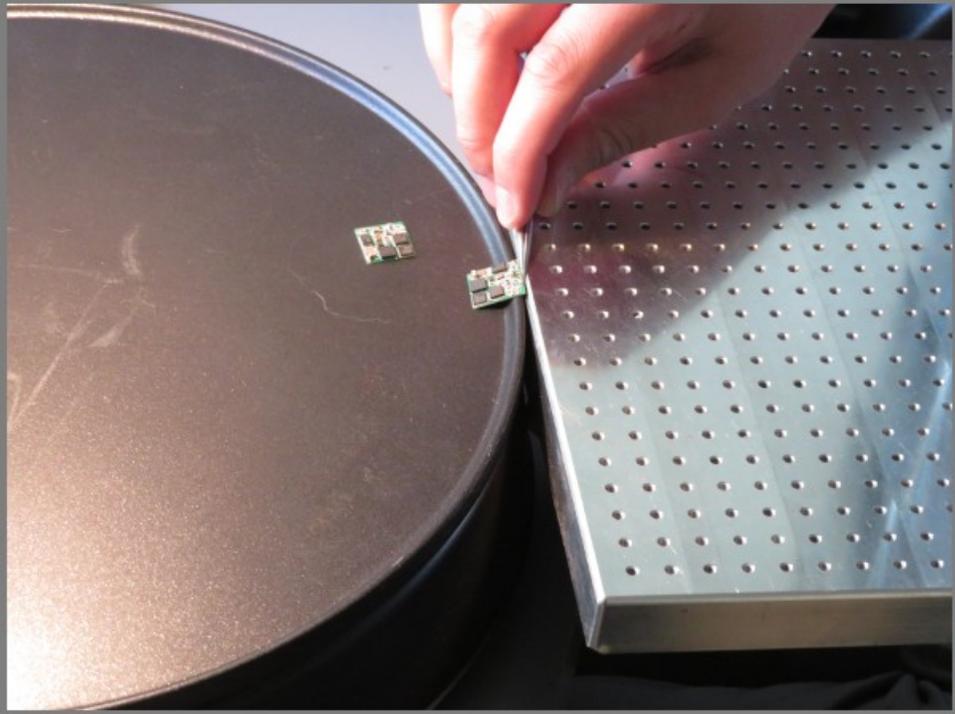
Germany

Sven, DL7AD

Thomas,
DL4MDW



One activity,
assembling pico-
trackers



Solar Balloon



France

Pierric, F4HCI,
AB1OM

Lucien, F4DKA

And their
associated local
amateur radio
clubs



Back to Maine for a few Balloon launches

- *Managed achieving our 100th launch and recovery
- *Would have had a few more, but the weather and winds didn't cooperate

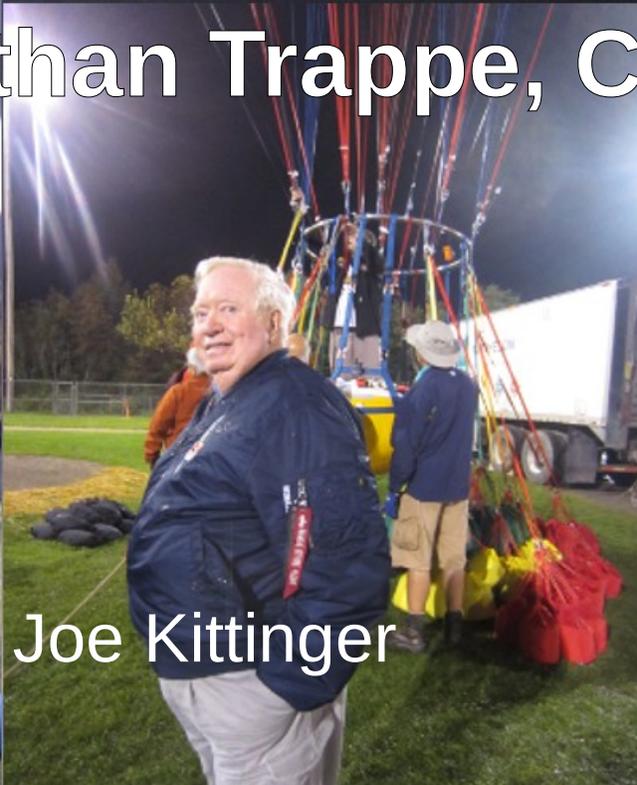
Some Remarks on the Visits

- *A number of people do use hydrogen; many use both that and helium
- *Quite a few use LoRa, some in Europe use RTTY and other modes
- *European rules are different (e.g., no airborne amateur radio in the UK, payload weight limits, etc.)
- *Quite a few were interested in pico-balloons (and other long-distance balloons).
- *Quite a few people were also involved in RadioSonde hunting, reprogramming for amateur radio band and sending back up
- *Unusual things like the “Solar” HAB, work at JP Industries projects, etc.
- *Learned quite a bit and made some good contacts

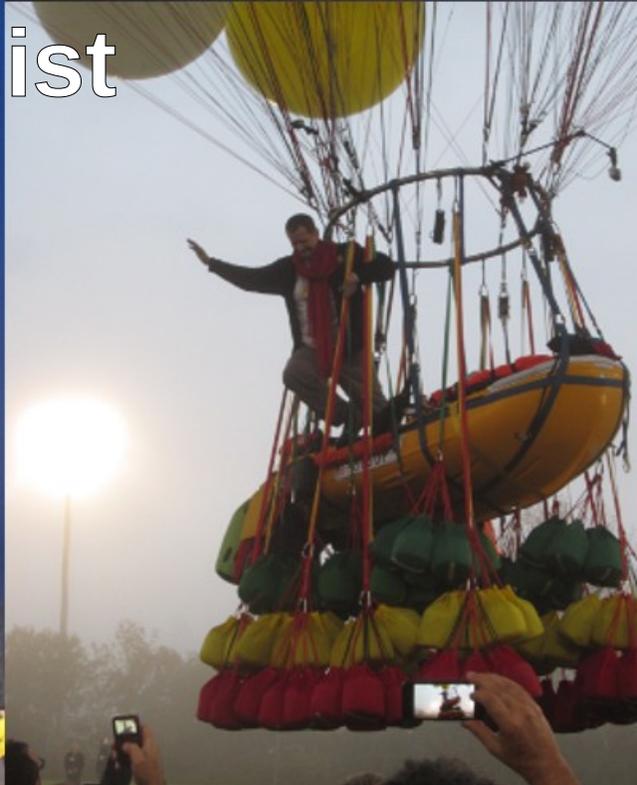
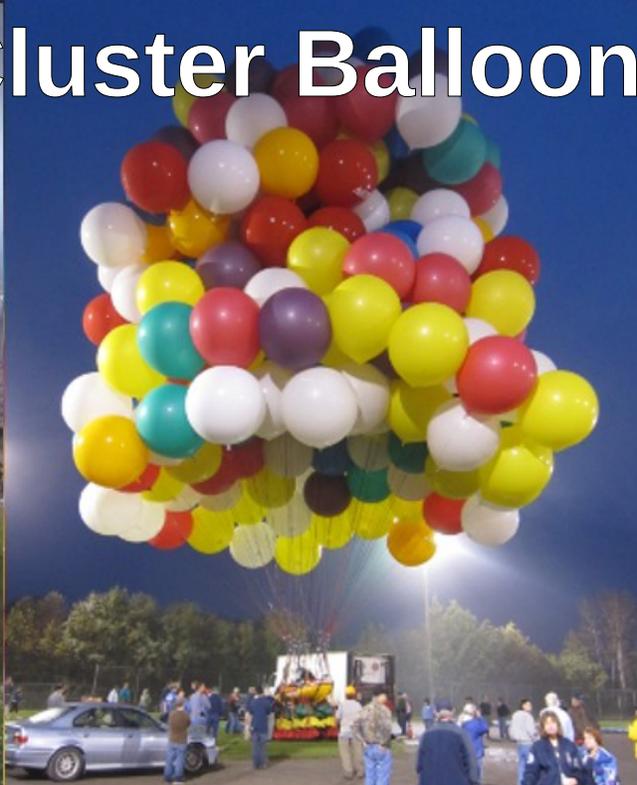
Balloons with Hydrogen

- *Background -- Jonathan Trappe
- *Gordon Bennett Cup
- *Flying with hydrogen

Jonathan Trappe, Cluster Balloonist



Joe Kittinger

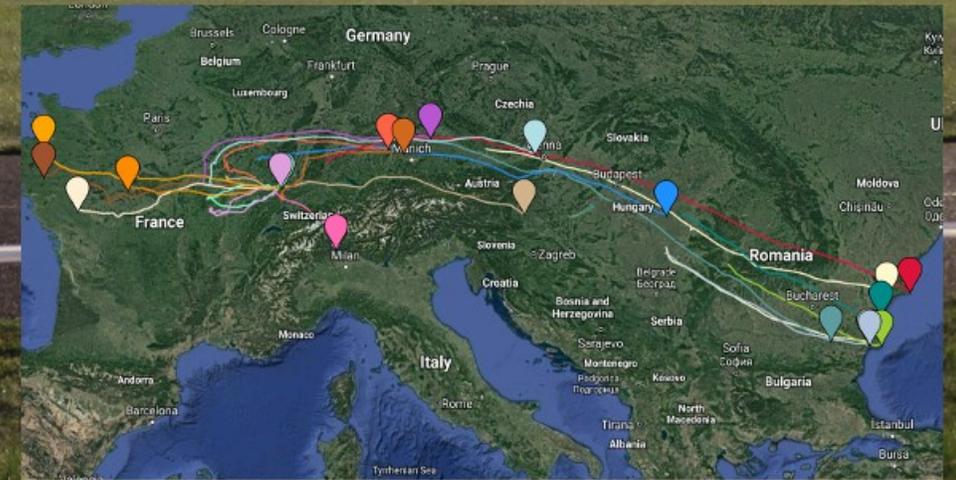


365 Balloons

Trans-Atlantic crossing attempt

Gordon Bennett Cup

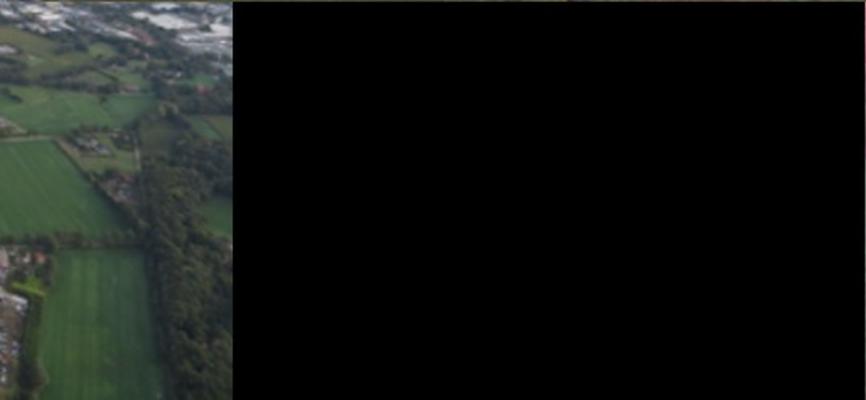
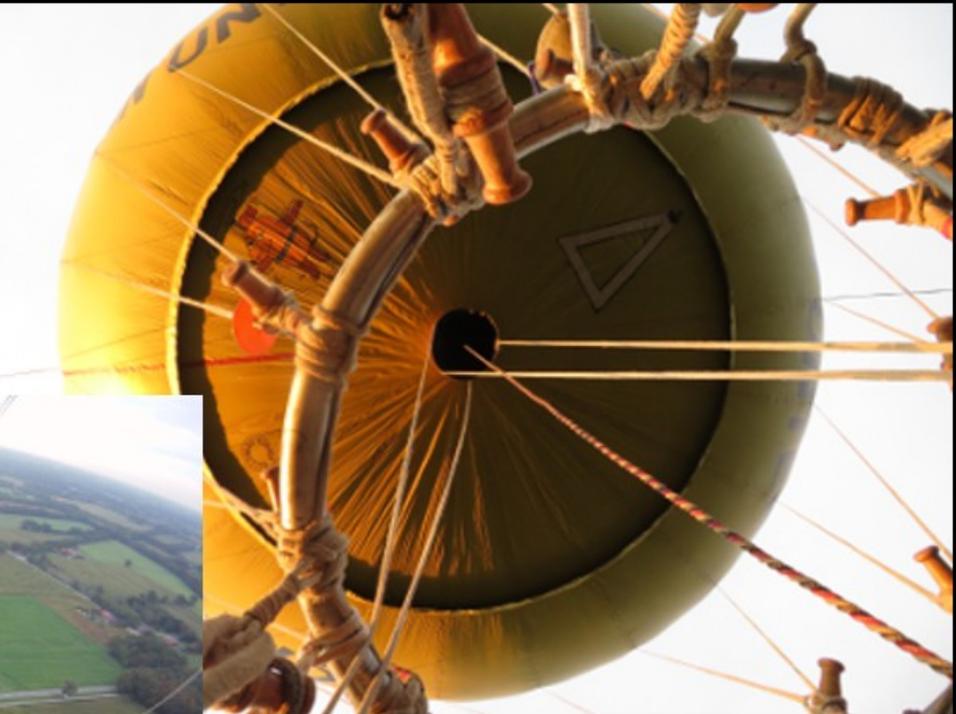
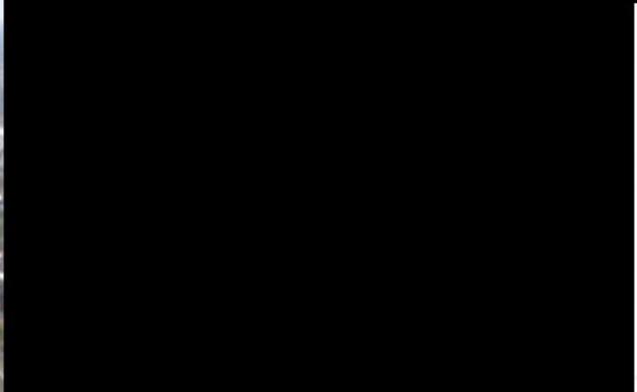
Montbéliard,
France



Willie, our Gas Balloon Pilot

- *Family spanning three generations of balloonists
- *Won Gordon Bennett Cup four times – record for the longest flight
- *Came in 2nd in Gordon Bennett Cup nine times
- *Has about 9000 hours in balloons, both gas (hydrogen) and hot-air with most of the hours in gas balloons
- *Over 1200 gas balloon flights
- *Jonathan Trappe related that he might be the most experienced balloonist of all time
- *Retired fire-fighter







Summary: Detailed List of Safety Precautions

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Detailed List of Safety Precautions

*Don't light a match when filling or exhausting gas (I'm just throwing this one in)





Some notes

- *I'm only relating what I experienced with the pilot on this H₂ flight
- *It does not reflect a great deal of personal knowledge, deep understanding of the science nor thorough examination of experimental evidence
- *I acknowledge that perhaps there might be other factors with HAB (sources of static?)
- *Follow laws and school policy for transport, use etc.
- *Don't do anything obviously stupid (such as lighting a match)
- *It seems that driving to launch and recovery is very likely the far greater risk.

Questions?