



Truculent Defiant

GOING WEST (literally, not figuratively) IN A HOMEBUILT TWIN BUILT BY VIKINGS



Canards West 2023 fly-in
Columbia, California (O22)



Overview

- *Who are we?*
- *N603TB Formerly LN-DDD*
- *Preparation*
- *Fuel System*
- *First Flight*
- *Challenges*
- *Planned Flight Home*
- *Actual (Partial) Flight Home*





Who are we?

Marc Zeitlin

- Biography - <http://www.mdzeitlin.com/Marc/bio.html>
- Built Quickie Q2
- Built COZY MKIV #386, N83MZ – ~1853 flying hours
- Unofficial COZY Builders Web Page & Mailing List
- Burnside Aerospace - provides engineering consulting and canard A&P services (Pre-Buy, Pre-Sale, Condition Inspection, etc.)



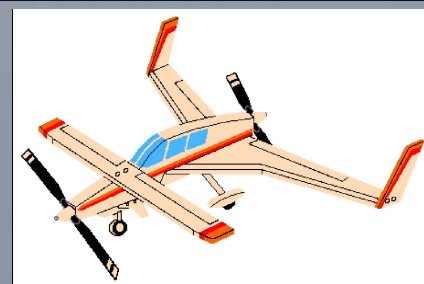
Izzy Briggs

- Based at KSFM Hanger E50 Sanford, ME
- IFR Rated Private Pilot, SEL and MEL
- Started BlackSky Composites, LLC 2022
- Husband and Father of four
- Second Generation Canard builder
- Cozy Mark IV builder
- Restored Steve Wright VariEze and Harley Dixon Long Eze
- Own 2 Defiants – LN-DDD and LN-RTI

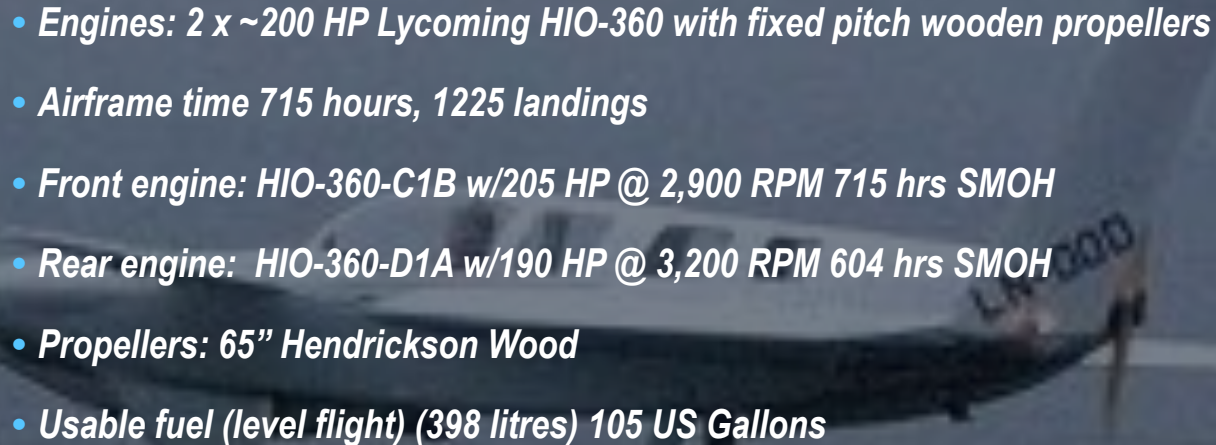


N603TB (Formerly LN-DDD)

- *LN-DDD is a Rutan Defiant Serial # 0024B*
- *Auto pilot integrated with Dynon EFIS*
- *Same builder/owner from 1993 to 2021*
- *LN-DDD was built in Norway by several project partners from 1993 to 2000.
Builders: Leif Alstadseter, Cato Arnesen, Klaus Nodland, Rune Rostrup, Alf Inge Hovland, Vidar Sorensen (no relation to Steve ☺)*
- *First flight was September 16th 2000*
- *Typical cruise speed: 160 Kts. Typical fuel consumption at cruise: 65 Litres/hour*
- *Fuel: 100 LL. Fuel capacity: 400 litres. Endurance 6 hours*



N603TB (Formerly LN-DDD) Continued

- *Engines: 2 x ~200 HP Lycoming HIO-360 with fixed pitch wooden propellers*
 - *Airframe time 715 hours, 1225 landings*
 - *Front engine: HIO-360-C1B w/205 HP @ 2,900 RPM 715 hrs SMOH*
 - *Rear engine: HIO-360-D1A w/190 HP @ 3,200 RPM 604 hrs SMOH*
 - *Propellers: 65" Hendrickson Wood*
 - *Usable fuel (level flight) (398 litres) 105 US Gallons*
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N603TB (Formerly LN-DDD) Continued

- *Maximum take off and landing weight 3000 lbs (1365 kg)*
- *Max Baggage Weight 400 lbs (182 kg)*
- *Empty weight 1970 lbs (895 kg) (Incl.2 x 6 qts oil)*
- *Maximum Useful load 1030 lbs (467 kg)*
- *Maximum service ceiling, two engines 18,000 Ft*
- *Service ceiling, one engine 7,000 Ft (Drift Down on Rear Engine)*
 - *Best climb angle both engines 100 KIAS*
 - *Best climb angle single engine 80 KIAS*
 - *Best rate of climb both engines 120 KIAS*
 - *Best rate of climb single engine 100 KIAS*

Preparation



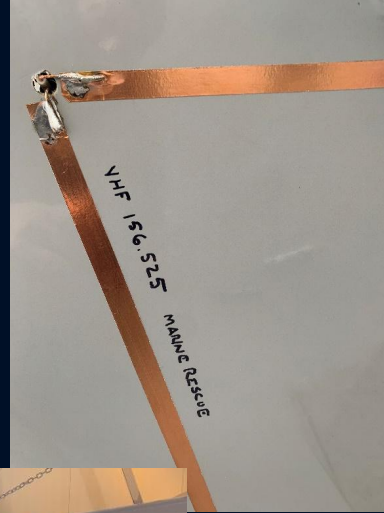
Preparation Cont.

- Full Deep Condition Inspection
- Register with US Markings (N603TB)



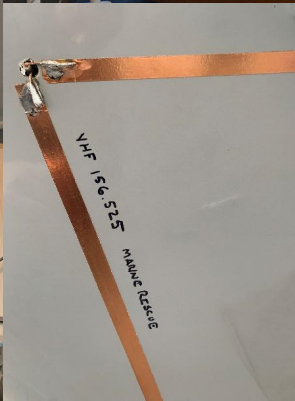
Preparation Cont.

- Install Garmin G5
- HF Radio ICOM 706 MK2G
- Narco Nav 122 ILS
- Bluetooth Satellite Phone
- iPad Mount and Charger
- Relief Tube
- Aux Fuel Tank
- Unpickle Engines



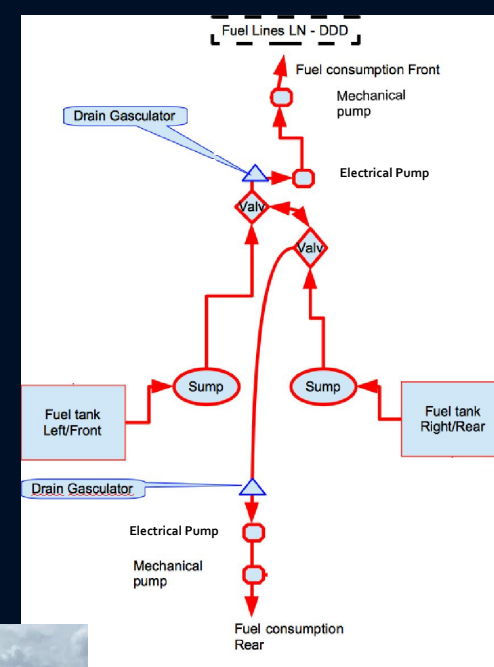
Preparation Cont.

- Marc gave WK2/SS2 presentation
 - <https://equatoraircraft.com/> crew
- Antenna Installations
- Oil Changes



Fuel System

For normal operations, the rear engine uses fuel from the right tank and front engine from the left tank. In general, the fuel valves are always in these "normal" positions and in flight fuel management is not required.



Aux Fuel System

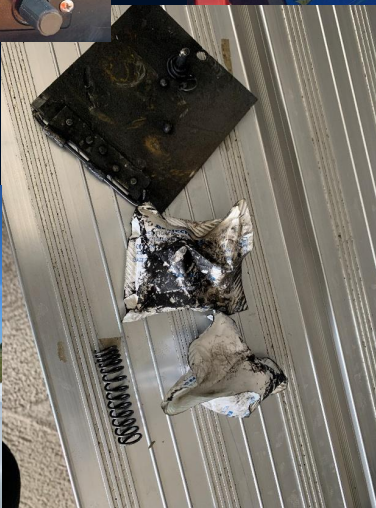
Fuel Management

- 1) Takeoff: Fire Extinguisher (auxiliary tank) Valve "Off" (turned to either side - horizontal). Both forward and rear engine selector levers "On" (forward position). Note the time and fuel used to climb to altitude. Should have burned about 12 gallons climbing to 10,000' - approximately 47 gallons remaining in each strake.
 - 2) Cruise: Rear engine selector Right tank "off" (rear lever to left), Fire Extinguisher (auxiliary tank) Valve "On" (turned up - vertical). Note the time to verify fuel burn later and verify ~47 gallons on each sight gauge.
 - 3) When rear engine stumbles (s/b around 6h into flight, after 35 gallons consumed by rear engine from Aux tank),
 - right tank still contains about 47 gallons
 - left tank now contains about 12 gallons
 - 4) Fire Extinguisher (auxiliary tank) valve "Off" (turned to either side - horizontal), rear engine right tank "On" (rear lever to forward position), note time, run 8 minutes to verify selectors are properly configured and both engines are running normally.
 - right tank now has about 46 gallons
 - left tank has about 11 gallons
- After the 8 minutes, switch engine selector right tank "On" (front lever to Right) until tanks are equal - approximately 2.5 more hours at cruise, consuming 35 gallons from right tank - or until commencing approach if less than 2.5h passes, then both front and rear levers forward (normal position, with front engine using the left tank and rear engine using the right tank).
- 5) Landing: leave both engine fuel valve levers forward, the empty Aux tank (Fire Extinguisher) lever remains "Off" (horizontal).



35 Gallon Aux
Tank Only feeds
the Rear Engine

Challenges



More Challenges...

- Marc Injured a rib repairing Nosegear
- iPad sunlight unreadable - washed out by overhead sun
- HF Radio antenna cancelled out VHF
- Desiccant Bag ingested into Rear induction at max static test
- Cowling removal difficult 2 person job
- Bluetooth Headset failed, neutralizing Satellite phone
- Spark Plug Cables not compatible with plugs or LSE coils
- Autopilot performed poorly...divergent negative oscillation
- Identified serious and dangerous issue with roll trim
- Unable to install front engine aux tank due to W&B
- Materials hard to source
- Debug Fuel Pressure Sender bad ground - Front Engine
- Airport closed 3 weeks for Model Airplane convention, severely limiting test flights
- Fuel \$16 a gallon!!!
- Izzy lacerated thumb during maintenance. Cost \$30...\$10 per stitch (but nurses!
- Relief tube 80% effective (don't ask)
- #2 Cyl Assembly on Rear Engine replaced
- Dynon 7" screen far away and hard to read rear engine data



Planned Flight Home

Norway - Iceland: ENTO SVA RIVEX GUNPA VM B1 EL BGBW

- Divert to Shetlands EGPB Sumburgh Airport
Divert here between 70 miles remaining to GUNPA and 490 miles remaining to VM
- Divert to Faroes EKVG Vagar Airport Information: 120.20, 124.85 Emergency: 121.50
Divert here between 490 miles remaining to VM and 190 miles remaining to VM
- Arriving Iceland BIRK planned, BIKF alternate (both airports have precision approaches), BIEG as secondary alternate.

Iceland-Greenland: RAKIS 6330N
6140N 6045N NA BGBW

Greenland-Canada: BGBW CYR

Canada-USA: CYR KBGR

Note elevation - central Greenland



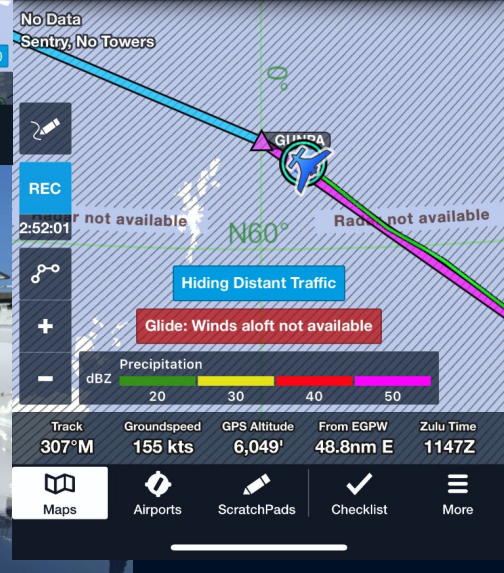
13:47

59.205/10.227 SVA 10000FT

FROM	TO	CRS	TOTALS
RIVEX	GUNPA	311°T	399 nm 54.5 g 2h41m
GUNPA	VM	293°T	985 nm 121 g 6h34m
VM	OLNOS	317°T	1,024 nm 124 g 6h49m

Dist	ETE	ETA(GMT)	Fuel	Wind
1,064 nm	7h03m	15:03	126 g	-

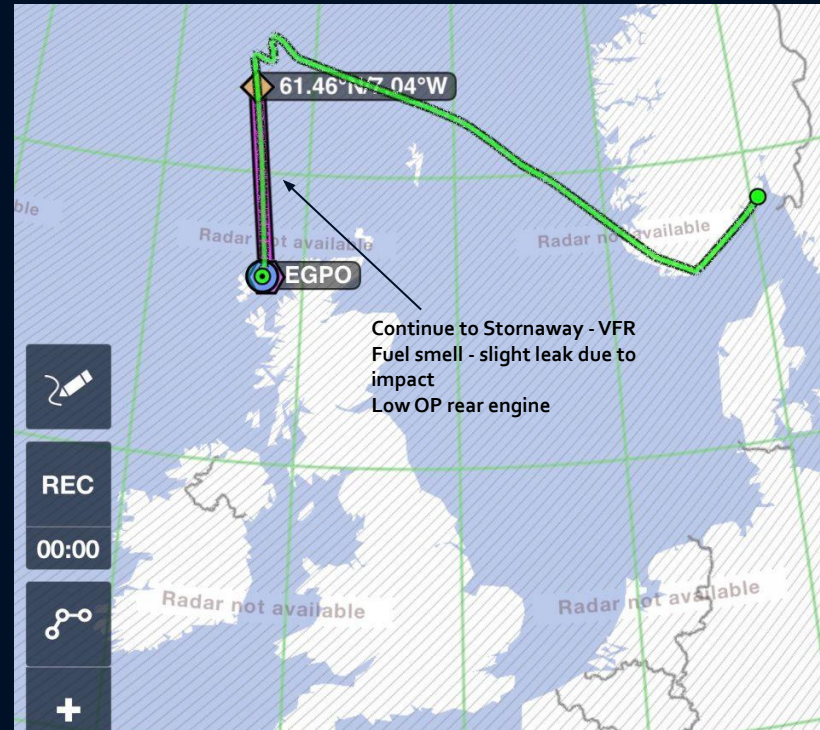
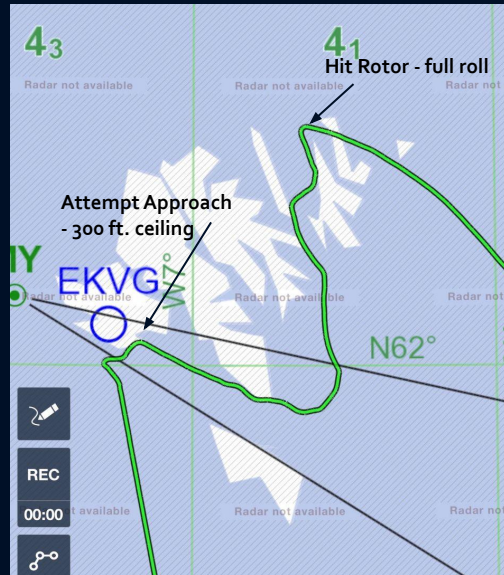
Edit NavLog Profile



Actual (Partial) Flight Home - Leg 1 (second attempt)

First Attempt scrubbed due to icing soon after takeoff from ENTO
Norway - Stornaway via Faroe Islands: ENTO EKVG EGPO
Stornaway Local News:

<https://www.stornawaygazette.co.uk/sport/football/atlantic-solo-pilot-has-a-lucky-escape-3819683>



Actual Flight Home - Leg 2

Stornaway - Iceland: EGPO - BIRK

Uneventful, except...

Hit R
high f

