

BLACK WIDOW · Research Program · COMPLETED WORK SUMMARY

In-kind milestone · dry assembly · engineering evidence
v1.1 · 2026-08-07 · Public · Website

1.1 Summary

- digital design and BW-C45 CAD package
- 100% canonical 3D-print scope** — 85 physical pieces (79 STL positions)
- dry structural assembly** of the plastic airframe in progress
- preliminary design review (PDR) and engineering baseline

This confirms **geometric and structural compatibility** of the platform before propulsion integration, avionics integration, and Phase I field testing.

Status: Print scope complete · Dry structural assembly in progress · August 2026
Components printed: 85 (79 canonical STL · photo-verified)

1.2 Completed work timeline

Period	Work	Outcome
2025–2026 Q1	CAD / design	Full BW-C45 digital assembly, parts tree
2026 Q1–Q3	3D printing	85 printed components — 100% canonical scope (Creality K1 Max ×2)
2026 Q3	Dry structural assembly	Plastic airframe assembly in progress
2026 Q1	PDR	Analytical review: geometry, mass, aero, risks
2026	Documentation	SPECIFICATION.xlsx, Master Book, calculations

1.3 Evidence by category (Evidence section)

ID	Category	What is confirmed	Status
EV-01	Components	85 printed parts — 79 STL · complete set	[documented]
EV-02	Dry Assembly	Airframe layout, structural fit — in progress	[in progress]
EV-03	Manufacturing	Creality K1 Max ×2 · print scope complete	[documented]
EV-04	Drawings	CAD schematic, engineering baseline	[documented]

Photo slots EV-01 ... EV-07 on the website are filled with dated images from the production baseline.

1.4 Completed work · detail

1.4.1 CAD and manufacturing

- Full BW-C45 CAD assembly (Phase I carrier: pusher + conventional tail)
- 79 canonical STL positions → 85 physical pieces printed and photo-verified
- Print parameter specification by part class (PETG, PETG-CF, LW-PLA)

1.4.2 Dry structural assembly

- Fit check of airframe, wing, fuselage, empennage — **in progress**
- Without** integration of: motor, ESC, avionics, EPM, FlyScout
- Goal: confirm structural compatibility before Phase I integration

1.4.3 PDR and engineering baseline

- Mass budget (MTOW target 1.80 kg) — analytical
- Aerodynamic assumptions (NACA 4412, Re ≈ 240,000) — analytical
- PDR risk matrix — internally reviewed
- Master Book / manufacturing baseline — documented

1.5 Explicitly outside this milestone

Item	Note
Avionics / propulsion integration	Phase I
Flight tests	Phase I
EPM n≥50	Phase I
Weighing / CG / FEA / XFOIL reports	Phase I or separate protocols
Serial production	Out of program scope