

Work Package	Task Description	WP Owner	Due date	Completion date	Work Package Description
WP1	Complete fabrication of fins	Andrew	Jan.4	Jan.15. Additional work required to finish fins.	Manufacture 4 composite fins. Sandwich construction with CoreCell core and single ply carbon skins, epoxy binder. Each fin to have an integral fairing foot to provide a bonding surface (to airframe). Fins to be dimensioned to engineering drawing, available from RN.
WP2	Mount and proof load fins.	TBD	Jan.24		Fins are to be adhesively bonded to motor casing (airframe) using structural grade flexible epoxy such as Scotch Weld 2216. Fins to be mounted to close precision alignment. Procedure to align & mount fins to be worked out by Work Package owner in collaboration with other SS2S team members, as required. RN to coordinate as needed. Proof loading in-plane and out-of-plane each fin once bond has cured. Proof Test Plan to be supplied by Richard.
WP3	Cast 12 propellant grains	Rick	Feb.5		Same as for ProtoSShot III
WP4	Manufacture 12 new ablative casting tubes	Richard	Dec.18	Dec.14	Same as for ProtoSShot III
WP5	Refurbish motor casings	Richard	cancelled		Same as for ProtoSShot III
WP6	Finalize fabrication and testing of Telemetry system.	Peter	Dec.1	Nov.23	
WP7	Finalize fabrication and testing of DTMF system	Andre	Nov.30	Dec.20	Leon has done most of the work already. Final assembly & testing. A tone generator may need to be constructed. Craig has committed to providing full support to whoever picks up this item. Leon has also stated he will provide support. Richard will be receiving the units from Leon and will forward them to WP owner. An instruction set is to be written which provides the step to be followed by the launch crew to set up and test the unit prior to flight.
WP8	Refurbish nozzle and midbulkhead (ablative + delay plug) and Fwd Bulkhead (cork + modify for flight configuration)	Richard	Dec.18	Nozzle completed Dec.20	Same as for ProtoSShot III.
WP9	Fabricate all airframe couplers	Monroe	Nov.22	Nov.30	Monroe has accepted this WP recently.
WP10	Modify booster to accomodate coupler attachment	Richard	Jan.15		Drill holes in aft motor casing to match coupler.
WP11	Avionics power supplies need to be selected, purchased and integrated into payload	Matt+Richard	Dec.11	Jan.4	Craig has done the legwork on this one, a final choice needs to be made on this study. Integration with payload needs to be done.
WP12	Mounting of all avionics equip. into support structure and integration within airframe. Support structure needs to be designed and fabricated.	Richard	Jan.17	Task started Jan.17. Completed Jan.25	Major task. Prelim layout of avionics has been determined.

WP13	Antenna for Telemetry needs to be designed, fabricated and integrated into airframe	Peter	Dec.1	Nov.27	<i>Integration into airframe to be done at a later date.</i>
WP14	AIPTEK HD video camera mounting provisions	Richard	Dec.18	Dec.18	Shock resistant mounting due to high descent rate of booster.
WP15	Recovery system design needs to be finalized, fabricated and tested (ground & flight)	Rick+Richard	Jan.10	Jan.10	Rick has been developing a concept and has done some flight tests. Need to pick up on where we left off and finalize design for flight testing. Richard has been designing a Pyro Separation Link and will test this in cooperation with Rick. Rick will do flight testing and ground testing.
WP16	Flight testing of Chute Controller and Featherweight	Chris	Dec.13	Nov.14	At least one more flight test of CC is needed.
WP17	Main Computer flight testing	Hans Rick- Richard	Canceled	<del>Delayed due to Netburner fault. Replacement ordered.</del>	Hans has flown two units in a DARK rocket in September. Our flight unit should be flown as well, prior to MiniSShot. Can be flown during test flights of Recovery System.
WP18	Forward airframe needs to be fabricated (recovery fairing + aft avionics bay fairing). Lightweight composite.	John	Nov.22	Oct.16	Must be significantly lighter than Ameron tubing which can be used if we accept the weight penalty (with associated apogee reduction penalty). Ameron weighs 0.70 lb/ft (1.05 kg/m).
WP19	Launch platform: decide if we'll use an existing one or fabricate?	Rick	Jan.10		Rick has been investigating this and will report on outcome of whether to use tower or rail launch and see if one is available. If rail is used, drop away launch straps to be used, with flight testing to prove concept.
WP20	Prepare pre-launch checklists and instruction sets.	Richard Rick Hans Peter Chris Andre	Jan.17	Peter has produced draft document for telemetry.	Needed for each avionic system such as CC, Main Computer, Parrot, Beacons, Vib. sensor (Andre has agreed), DTMF, cameras, telemetry, etc.
WP20A	Prepare pre-launch checklists and instruction sets.	Hans	Jan.17	Oct.31	Main Computer instruction set.
WP20B	Prepare pre-launch checklists and instruction sets.	Chris	Jan.17	Nov.26	Chute Controller instruction set.
WP20C	Prepare pre-launch checklists and instruction sets.	Chris	Jan.17	Jan.10	Featherweight Parrot instruction set.
WP20D	Prepare pre-launch checklists and instruction sets.	Chris	Jan.17	Jan.10	Radio beacon (Beeline) instruction set.
WP21	Motor & vehicle final assembly	Rick Matt Paul Chris Peter	Feb.7		To be done in final days prior to launch.

WP22	Install temperature sensors in nosecone	Richard	Dec.18		
WP23	Design/fabricate separation (electrical) connector	Chris	Jan.17	Jan.9	Needed to accomodate separate descents of booster and payload capsule.
WP24	Full-out Ground testing of installed & integrated avionics, together with ground support for such.	Chris+Rick	Jan.24	Postponed to Jan.30-31	Large task, should be picked up by someone who is willing to spend time to learn and understand the complete avionics and other payload packages. An instruction set to be written which will provide a checklist for launch crew to follow to prep and test the avionics prior to launch.
WP25	Ground based software for tracking telemetry	Peter	Dec.18	Dec.5	The software should ideally take the data received from on-board telemetry and display the flight parameters & events "real-time".
WP26	Hydrostatic proof test both motor casings	Richard	Jan.12	Jan.9	Same as for ProtoSShot III. Done after WP32 is complete.
WP27	Run flight sims using SOAR.	Richard	Nov.28	Dec.7	To compare to WP28 results.
WP28	Run flight sims using ROCSIM, RASAero (or other)	Hans	Nov.14	Nov.14	As a comparison to SOAR results, to provide confidence in altitude prediction. Other softwares can be used. Drag needs to be modeled with care.
WP29	Vibration sensor, complete fabrication & flight test	Andre	Nov.30	Dec.5	
WP30	Proof load assembled vehicle to ensure structural integrity of full airframe, in particular, payload fairing, recovery fairing and all joints.	Matt+Rick	Jan.24	Canceled. Structural analysis basis of acceptance.	Richard will supply test plan including loads.
WP31	Test avionics at reduced air pressure (equiv. to 40k ft)	TBD	Jan.24	canceled	Need a barometric chamber. To be done after all avionics integrated into Payload Bay.
WP32	Drill & tap airframe & couplers.	Richard	Jan.10	Jan.18	Work has begun and is 50% complete as of Jan.11
WP33	Power supply life testing	Richard	Dec.18	Dec.20 CR2's recommend by RN. Matt revisiting power supplies to consider LiPo secondary cells. Completed Jan.24	Connect avionics devices to proposed power supply and operating for extended duration, recording life of battery (V, I) over the duration, in order to determine if life needs are met. Richard will perform testing of beacons and Parrot. Ties in with WP24.
WP34	Prepare new motor casings.	Richard	Jan.10	Jan.9	Same as for ProtoSShot III except use Garolite liner instead of stainless steel foil to reduce scorching of interior.

