NAR LEVEL 1 HIGH POWER CERTIFICATION APPLICATION

APPLICANT INFORMATION *(Completed by Applicant, **Print clearly**, failure to do so will delay certification.)*

Name _____ (First) _____ (Last) Email: _____

Address _____

City _____ State _____ Zip Code _____

Birth Date ____ (Month) /____ (Day) / ____ (Year) Phone (_____) _____ NAR Number _____ Expiration Date _____

I, _____ , certify that I am a member in good standing of the National Association of Rocketry. I am 18 years of age or older and I understand that I must comply with all applicable federal, state, and local laws or regulations during and after this certification attempt.

Signed _____ Date _____

HPR LEVEL 1 CHECKLIST *(Certification Team—Use this section for Level 1 Certification Attempts.)*

Preflight: Motor Used _____ *(At least one motor must be a H or I impulse motor.)*

☐ Motor is certified ☐ FAA COA activated (if required) ☐ Safety checklist completed (see back)

Flight: ☐ Flight was stable ☐ Recovery system deployed ☐ Safe recovery

Post Flight: ☐ Verify that no major damage is present. Minor impact damage or "zipper" is acceptable.

☐ Verify motor present **Successful Flight? ☐Yes ☐No**

CERTIFICATION AFFIDAVIT

*(Successful flights only, completed by the Certification Team. **Print clearly,** failure to do so will delay certification.)*

The undersigned, being members of the National Association of Rocketry have witnessed a flight by

_____ , NAR Number _____, of skills relative to the building and safe operation of High Power Rockets. We attest that the applicant is 18 years of age or older and a member in good standing of the NAR. We believe this member is qualified to build and operate High Power Rockets with a total installed impulse up to 640 N-sec. Level 1.

Name _____ Signature _____ NAR # _____

Email _____ Membership Expires _____ HPR Cert. Level _____

Name _____ Signature _____ NAR # _____

Email _____ Membership Expires _____ HPR Cert. Level _____

Form MUST be signed by Certification Applicant and Certification Team.

NAR HPR LEVEL 1 TEMPORARY CERTIFICATION

has been completed by

_____
Name

_____ _____
NAR Number Certification Date

_____ _____ _____
Witnessed By (Print Name) NAR # Cert. Level

This card is void 60 days after Certification Date.

TO COMPLETE YOUR LEVEL 1 CERTIFICATION

*Go to NAR.org and log into your account. From the main Member Resources page, fill out the Level 1 Digital Certification Form. Pictures of **this** paper form must be attached to the digital form.*

Cut along dotted lines.

NAR HIGH POWER CERTIFICATION CHECKLIST

Answer "YES", "NO" or "N/A" (not applicable).

Has the rocket model that is being used for the certification attempt been built by the applicant requesting certification?	
Is the nosecone or payload shoulder sufficiently tight to prevent drag separation? The nosecone or payload should not wobble side to side or separate from its own weight. Is a vent hole needed to relieve pressure for high altitude flight? Do stage couplers fit snugly to prevent bending or separation during flight? Is the body tube thickness adequate to withstand high power flight (typically .050 inch walls or thicker)? Is there pre-existing damage which may weaken the model structure (e.g. tube crimps)? Are screws and fasteners tight, if used?	
Are the rail buttons properly sized (for 1010 rail or larger), positioned and aligned correctly, and securely fastened to the airframe? For launch lugs, are they properly sized for the model (typically 1/4 inch dia. or larger), positioned and aligned correctly, and securely fastened to the airframe (taped on lugs are not permitted).	
On cluster models, are the spaces between the motor tubes filled to prevent ejection pressure leakage? If mixing black powder and composite motors, does the modeler assure composite motor ignition before black powder motor ignition (composite motors ignite more slowly than black powder motors)? If the cluster model is not using all of its motors, are the unused motor tubes plugged to prevent ejection blow-by?	
If a Level 1 Certification is being attempted, does the rocket model contain at least one H or I impulse motor?	
Is (are) the motor(s) sufficient to safely fly the model? Use motor manufacturer's recommendations or recommended motor lists for similarly sized models as a starting point (Also consider, model weight, configuration, and finish when evaluating motor capabilities). Is (are) the motor(s) either NAR, Tripoli or CAR certified? Motors must be currently certified to be used. Low current igniter? ☐ Yes ☐ No	
Is (are) the rocket motor(s) firmly restrained in the model? Check for engine mount integrity to prevent a "fly through" (Is a thrust ring used?). Check for a motor hook or similar motor restraint. Carefully check taped or friction fit motors for tightness. Ask the modeler what adhesives were used during assembly. Are clusters wired in parallel?	
If electronics are used, is the battery secured against "g" loads? Will electrical connections fail or loosen from acceleration forces? Will igniters stay fully inserted in rocket motors during boost? Is the user protected against inadvertent operation, e.g. is the circuit remotely armed, are safety switches present, is an armed status indicator used (visual or audible)? Does the modeler have a checklist or reminder to arm or operate the system prior to flight?	
If radio control is used for flight functions (e.g. recovery), is the operating frequency in the 27, 50, 53, or 72 megahertz bands? Use of 75 megahertz for flight functions is not permitted. Is the antenna protected from breakage (not flopping freely)? Did the operator range check their equipment?	
Are the fins fully secured to the model? Check for looseness or cracking at the fin to body tube junction. "Thru the wall" construction is recommended for high power models. Is the fin material compatible with the motor thrust range (1/8 inch minimum plywood is recommended for high power models)? Ask the modeler how their fins are mounted, what adhesives were used (epoxy is preferred), and what fin material was used. Are the fins mounted parallel to the roll axis of the model? Are any warps present which may cause erratic flight?	
Is the model stable? If stability is in doubt require proof of the CG and CP locations (remember CG should be forward of the CP by approximately 1.0 body tube diameters). Ask the modeler to show the CG and CP locations and how they were determined. Verify that the modeler shows the CG with the motor(s) intended for flight and not a smaller motor or fewer motors (clusters). Ask the modeler to show CG and CP for the complete model and less each stage for a staged model. Require evidence of CP calculations if further doubt exists.	
Is the model in compliance with the FAA Certificate of Waiver or Authorization (COA)? Verify compliance by comparing model weight and power with charts/tables (if available) or by calculation. Ask the modeler what the expected performance is and how this determination was made (e.g. computer simulation, similar models).	
Does the recovery system being used follow the requirements of an Active Recovery deployment system required for certifying? Inspect the recovery system. Verify that the shock cord is not cut or frayed and is free of burns. Are the shock cord mounts securely mounted to the model? Are sharp edges present which may cut shock cords, parachute risers, and suspension lines? Is hardware, e.g. swivels, screw eyes, sufficiently strong to withstand recovery loads. If required, perform a pull test on the recovery system. Is parachute protection (e.g. wadding) adequate? Check for parachute damage, e.g. tears, burns, which may spread during recovery.	