

# NAR HIGH POWER CERTIFICATION APPLICATION

## APPLICANT AND MOTOR INFORMATION (Completed by applicant)

Name: \_\_\_\_\_ Birth Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
First Last

Address: \_\_\_\_\_ Eve. phone no.: (\_\_\_\_)\_\_\_\_\_  
Street Apt.

\_\_\_\_\_ Cert. level requested:  "1"  "2"  
City State ZIP

NAR No.: \_\_\_\_\_ Membership expires: \_\_\_\_\_ TRA No.: \_\_\_\_\_  
Is membership current?

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

Signed: \_\_\_\_\_, Date: \_\_\_\_\_, Location: \_\_\_\_\_

Motor(s) used: \_\_\_\_\_ Motor Manufacturer(s): \_\_\_\_\_

Can the NAR list your name as someone who will assist others to certify (circle one)? Y N

## CERTIFICATION CHECKLIST (Completed by certification team)

Preflight	Flight	Post Flight
<input type="checkbox"/> Passed Level 2 regulations test on ____/____/____ (Is test pass within 1 year of the flight date?) <input type="checkbox"/> Regulations test not required (Level 1) <input type="checkbox"/> FAA waiver available (if required) <input type="checkbox"/> Safety checklist complete (see back) <input type="checkbox"/> Motor is certified	<input type="checkbox"/> Model is stable <input type="checkbox"/> Recovery system deployed <input type="checkbox"/> Safe recovery	<input type="checkbox"/> Verify that no major damage is present. Minor impact damage or "zipper" is acceptable. <input type="checkbox"/> Verify motor(s) is (are) present
<b>Successful flight?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> If not, why not? _____		

## CERTIFICATION AFFIDAVIT (Successful attempts only, completed by certification team)

We, the undersigned, being members of The National Association of Rocketry distinct from the applicant, have witnessed a demonstration by (Name) \_\_\_\_\_, (NAR #) \_\_\_\_\_, 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 models with a total installed impulse up to  640 N-sec. (Level 1)  5120 N-sec. (Level 2)

Name (printed): \_\_\_\_\_ Signature: \_\_\_\_\_ NAR No.: \_\_\_\_\_

Birth Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Membership expires: \_\_\_\_\_ Certification level: \_\_\_\_\_

Name (printed): \_\_\_\_\_ Signature: \_\_\_\_\_ NAR No.: \_\_\_\_\_

Birth Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Membership expires: \_\_\_\_\_ Certification level: \_\_\_\_\_

Cut along dotted lines

Rev. 10 May, 1999; File: Cert. sheet - 4e1

### NAR HIGH POWER CERTIFICATION

NAR No.: \_\_\_\_\_ Expiration date: \_\_\_\_\_

Name: \_\_\_\_\_

Certification Date: \_\_\_\_\_

Certification Level: "1" "2"

Witnessed by: \_\_\_\_\_  
Authorizing Signature

Witnessed by: \_\_\_\_\_  
Authorizing Signature

Void 1 year after certification date or on expiration date, whichever comes first

1) Request Level 2 tests from:

Stephen Lubliner  
 9968 E. Domenic Lane  
 Tucson, AZ 85730  
 Tel # 520-296-1689  
 E-mail: 103056.621@compuserve.com

2) Send completed forms (with tests, if applicable) to:

National Association of Rocketry  
 P.O. Box 177  
 Altoona, WI 54720

## HI-POWER ROCKETRY CERTIFICATION CHECKLIST

<p>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?</p>	
<p>Are the launch lugs securely fastened to the model?. Verify no cracking of adhesive joints. Is the launch lug(s) appropriately sized for the model, typically 1/4 inch or larger diameter? Will the launch lugs bind on the launch rod? Taped on launch lugs are not permitted.</p>	
<p>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 blowby?</p>	
<p>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 rocket motor(s) either NAR or Tripoli certified? Motors must be currently certified to be used.</p>	<p>Low current ignitor?                      Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>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?</p>	
<p>If electronics are used, is the battery secured against "g" loads? Will electrical connections fail or loosen from acceleration forces? Will ignitors stay fully inserted in rocket motors during boost? Is the user protected against inadvertant 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?</p>	
<p>If radio control is used, is for flight functions (e.g. recovery) 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 his equipment?</p>	
<p>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 his 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?</p>	
<p>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.</p>	
<p>Will the model "bust" the FAA waiver? 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 he made his determination(e.g. computer simulation, similar models)</p>	
<p>Inspect the recovery system. Verify that the shock cord is not cut or frayed and 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.</p>	