

Level Two, Some Information and Suggestions

Two national organizations certify rocketeers for high power. They are the National Association of Rocketry (NAR) and the Tripoli Rocketry Association (TRA). The certification processes are quite similar, but with a couple notable differences. Each organization accepts certification by the other, so if you are a member of both you can certify using either process. The main difference for Level 1 and 2 certification is that for TRA the people who can administer the certification process are limited, but NAR allows a more flexible combination of certified flyers or adult members. You do need to carefully review their websites to make sure you have up to date information and then can pick which way to go. Of course, if you are a member of only one then you go with their process.

You must be a member of one or the other, and you must be certified Level 1 before you attempt level 2.

There are a couple of requirements for level 2 certifications, both NAR and TRA.

First there is the written test on the applicable safety code and rocketry techniques. Second there is the requirement to build and fly a rocket suitable for a level two motor, that is, "J" through "L".

The tests for level 2 are to ensure that you know enough about rockets that you can build one that is safe to fly, and know what you need to do to fly it safely. This is why at ROC launches we require Range Safety Officers (RSO) to be certified to at least level 2. We can expect you to know your stuff if you pass the level 2 test.

The tests are multiple choice, and cover a lot of territory. You do definitely need to study things like safe distances and the size of the flying field. It is a challenge to pass and not everyone does the first time.

The National Association of Rocketry test consists of 37 questions, selected from 5 different areas, and you need to get 32 correct to pass. (No, I don't know why such an odd number...) The NAR website has a "Level 2 Written Exam Study Guide" to help, and also online practice tests. They have a practice test for each of the five sections of the actual test.

The Tripoli Rocketry Association level 2 test has 50 questions, evenly divided into two categories: technical and safety. You must get a total of 45 questions right. Again, it helps to know the Tripoli Safety Code inside out and study in detail. TRA also has a study guide available online.

I think it is a good practice to take the test while you are building your rocket and getting ready, and then do the actual certification flight at the next launch. That removes a stressor from your weekend, so you can relax and enjoy your cert flight a lot more. Well, okay, maybe stress a little less...

The certification (cert) flight is the next and final step. Once you have passed the test, you need to fly a rocket that you have built, from scratch or a kit, on one certified motor in the J to L range; 641 to 5120 Newton-Seconds of total thrust. Yes, that offers a pretty wide selection to choose from.

As for the rocket you use, I think that keeping things simple and robust is the way to go. The conventional wisdom has been that cert flights should be "low and slow" and not push your skills to the limit. Note that "low and slow" for J through L motors is a bit different than for many level 1 motors.

Of course a lot of folks like to ignore conventional wisdom. My advice is to stick to what you know well for a cert flight. After you get the cert you can push it to the limit and play with bigger rockets!

Level 2 certification does not require electronics or dual deployment, and does not allow staging, clustering, or any of the other things that draw gremlins to rockets. A simple “three fins and a nose cone” with motor ejection works just fine. My level 2 cert rocket was just that—a PML Pterodactyl Junior on an Aerotech J-350 that was “strengthened” according to PML directions. It used motor ejection for a single parachute at about 5,000 feet. Incidentally, the J-350 is far and away the most popular level 2 cert motor, although there are some Cesaroni motors that are catching up fast.

There are some folks who want to go straight into more complex rockets and certify with electronic ejection and such. If it works, that is great. If it doesn’t work—there is no limit on attempts.

You may try whatever you feel comfortable with for your certification flight. I do strongly recommend keeping things fairly simple, and especially not trying out new techniques or technology during a cert flight. If you have never flown a rocket with an electronic altimeter for recovery, your cert flight is probably not the best time to try it out.

Again, get the cert, and then you can play with the other stuff!

At any ROC launch there will be certified flyers who will be happy to answer questions, give advice, and even show you the rockets we used to certify, if we have them at that particular launch

Ask at registration, and you will be directed to someone to administer the test, review your paperwork, and witness your certification flight. Most monthly ROC launches see a level 2 cert, and maybe several.

Occasionally you will see “certification specials” from the motor manufacturers or dealers. When I did my level 2 certification, Aerotech was offering a free J-350 reload to a limited number of people doing cert flights that summer. I was able to get my request in and get one of those. This kind of special is offered from time to time, so watch the manufacturer’s web site. Also the vendors at ROC launches will occasionally let us know about a special that they or a manufacturer are offering, so watch the ROC-chat and our Facebook page. You might be lucky enough to get a special deal when you are ready to certify!

Definitely check the Bay Area Rocketry website for their current certification specials.

Good luck! I hope you successfully qualify to burn up some more expensive motors in the near future!

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