

Rocketry Organization of California  
14603 Greenleaf Street  
Sherman Oaks, CA 91403

# Event Operations Plan

Nominal Version Covering Monthly Launches and ROCStocks

Launch Location:

Lucerne Dry Lake [SEC26 TP 5N R1W], SBC Parcel 0452-031-01-0000  
San Bernardino County  
California

**Valid for launches in Fiscal Years 2023 to 2027, inclusive:**

*(Note: this plan is updated quarterly and provided to the the BLM as requested)*

ROC BLM Point of Contact:

Allen Farrington

[allen@alumni.duke.edu](mailto:allen@alumni.duke.edu)

818-653-2284

ROC Board:

All of the persons listed below function as point of contact, safety officer, and first aid coordinators, depending on the particular staffing at any launch.

Officers of the corporation are elected each year in November. Quarterly updates include the current set of officers.

ROC President:

ROC Vice-President:

ROC Treasurer:

ROC Secretary:

ROC Equipment Coord.:

This plan includes the Medical/Rescue/Fire plan for all normal operations as well as emergencies that could be encountered during these events being held on public land. It also includes the expectations and guidelines for the crews assigned to cover this event to ensure public safety.

\*\*\*This plan may be distributed to Fire/Medical and Law Enforcement to ensure uniform response. \*\*\*

**Definitions**

ROC - the Rocketry Organization of California.

Monthly Launch - A launch held on the weekend of the second Saturday of the calendar month. The launch may be one or two days in duration and may commence on either the Friday or Saturday of the weekend.

ROCStock - A three day launch held in June and November of each year around the second Saturday of the month and includes nighttime activities.

ROCTober - A two-day launch held in October of each year around the second Saturday of the month (all-day Saturday, half-day Sunday) focused on Youth Groups.

Participant = Flyer - in this document the words participant and flyer are equivalent and distinguished from spectator.

Spectator - a non-flyer attending the launch. Signs a waiver, however, there is no fee associated with spectating. We estimate spectators by multiplying the number of flyers by 3.

Youth-Group - In order to support the education aspects of Rocketry (ROC is a 503(c) IRS Tax Exempt Corporation), ROC allows organized Youth Groups, e.g. Scouts, TARC teams, schools, Civil Air Patrol, etc..., to fly a group as a discounted rate. We report those groups as one flyer in our reports and estimate the spectators.

**Statement of Purpose**

The purpose of this document is to provide the procedures to protect life and property during the event and to ensure smooth operations.

All personnel should familiarize themselves with this plan and be prepared to fill their role and render assistance at any time to reduce injury, loss of life, or damage to property.

**Applicable Documents**

ROC events are operated in accordance with multiple documents covering federal, state, and NAR/Tripoli laws, regulations, and rules.

- 1.
2. Title 14, Code of Federal Regulations, Section 101.25(f) (FAA)
3. ROC Certificate of Waiver covering item #1, above.
4. NFPA 1122, Code for Model Rocketry
5. NFPA 1127, Code for High Power Rocketry
6. California Health and Safety Code, Section 12500-12728 (Fireworks Law)
7. Title 19, California Code of Regulations, Chapter 6 (Fireworks Regulations)
8. Title 13, California Code of Regulations, Selected Sections (Hazardous Materials Transportation - Rocket Motors)
9. National Association of Rocketry - Various Bylaws, Rules, and Guidelines
10. Tripoli Rocketry Association - Various Bylaws, Rules, and Guidelines
11. Bylaws of the Rocketry Organization of California

**Event Overview**

ROC operates Monthly Launches as well as ROCStock events. All types of events follow this plan with the primary difference being the duration of time for the total event. Some public health and safety modifications are used for the ROCStock events as the attendance is usually significantly larger than that for a monthly launch. Details of ROC's policies and procedures can be found online at [www.rocstock.org](http://www.rocstock.org) and at the actual launch in the ROC administration area.

Estimated Number of Participants (Flyers):

Monthly Launch - Varies from 25 to 50, typically about 40.

ROCStock - Varies from 50-200, typically about 150 daily, 100 overnight.

Estimated Number of Spectators:

ROC events are advertised and free to spectators so the turnout is highly variable due to weather and other seasonal effects.

Monthly Launch - Varies from 25 to 250, typically about 150.

ROCStock - Varies from 250 to 2000, typically about 1000.

In our reporting, ROC estimates 3 spectators for each flyer.

Event Staff:

Monthly Launches - 4 to 10, depending on the season.

ROCStock Events - 25 to 30.

ROC conducts its primary operations on BLM land. ROC uses the entire "square" noted by Stipulation #20 and our application map area. See the document, "ROC Range Layout.pdf" for dimensional details. Per prior direction from BLM that Lucerne Dry Lake is a "traditional use area", ROC does not restrict traffic on the lakebed. That said, most participants use the marked routes on the lakebed until they are required to leave the route to retrieve a rocket. Occasionally a rocket will drift onto private lands (still on the dry lakebed). Those incursions are temporary, however, ROC has attempted contact with the owners of those properties to offer insurance coverage.

ROC events do not have temporary structures with the exception of "EasyUp" shades, cars, trucks, and recreational vehicles.

ROC has vendors on-site during both Monthly Launches and ROCStock events. ROC does not charge any fee to vendors. ROC vendors are advised to obtain their own BLM, business, and health department permits as required. To our knowledge and per our annual vendor waiver process, all ROC vendors are in compliance with BLM permits. ROC does not get any revenue from the vendors.

***The ROC BLM Permit does NOT cover any vendors, per ROC Policy, all vendors are required to obtain their own BLM permits.***

ROC occasionally has news media at its events. At ROCStock events, media is coordinated by the ROC board. Occasionally, filming is done at ROC events by

contractors representing various science and educational channels. That filming is done in coordination with our launch, however, it is not done under contract to ROC. We advise all media companies to obtain proper filming permits from both local, state, and federal organizations.

ROC contracts with a sanitation service provider in Lucerne Valley for all launches. Portable restrooms (2-4) are provided for monthly launches. Additional restrooms, up to 12 are provided for ROCStock events. For monthly launches, ROC observes a “leave no trace policy” and reminds participants to pack out trash themselves. ROC polices the trash and FOD situation during all launch activities and makes public address announcements regarding such.

ROC encourages camping both before and after monthly launches and during ROCStock events. Participants and spectators are reminded via regular public address announcements of the regulations regarding camping on the lakebed, especially with respect to fire restrictions.

### **Emergency Operations**

We notify the Lucerne Valley Fire Department annually of our activities and they provide both fire and medical emergency response. In addition, the San Bernardino County Sheriff's department is notified of our operations on an annual basis.

For all launches, the primary medical needs associated with the conduct of our activities includes minor cuts, scratches, and burns associated with hobby/craft construction activities. Our participants use knives, soldering irons, and hand tools in the conduct of their on-site activities. ROC maintains first aid equipment to handle these types of needs, however, they are not typically employed as most participants cover their own needs.

Other issues encountered at ROC events include minor car accidents (posted lake bed speed is 5 MPH), minor falls (sometimes the lakebed has gullies), dehydration, and sunburns. ROC provides safety reminders regularly via public address announcements.

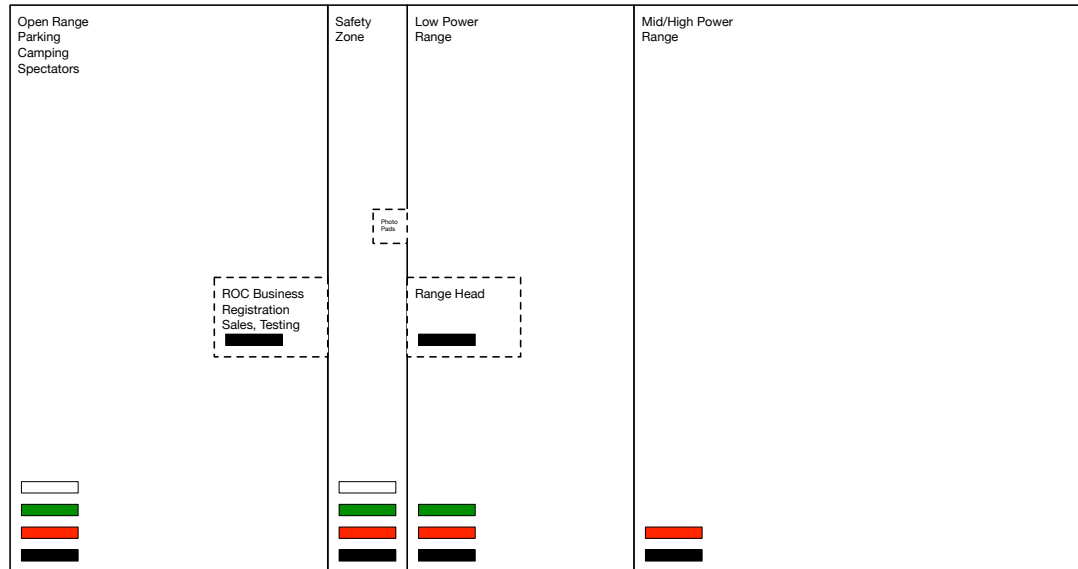
Launch operations involving rocket motors are conducted in a restricted area in full view of both the Launch Control Officer and the Range Safety Officer. At ROCStock events, additional range staff is provided to assist participants in their launch preparations. Through those staff members, ROC is able to quickly identify anyone injured or in distress. Since the range is under full staffing and control during all launch operations, there is no “unattended” risk associated with launch operations. In addition, ROC maintains a set of fire extinguishers both on the range and within the ROC administration area and are readily available for inspection. These are professional-grade extinguishers that are serviced annually. Extinguishers are placed at each pad bank (set of six pads) and with our electrical generator.

For major medical needs such as illness, heart attack, or severe dehydration, ROC relies on the local first responders (Fire, Sheriff, etc...) to meet our needs. We simply

## ROC Range Control

*Not to scale.*

- Spectator Armband
- Uncertified Flyer Armband
- Certified Flyer Armband, Carries Cert Level Mark
- All-Access Armband (Board, RSO's, LCO's, PM's), worn with other armband.



use the existing 911 emergency response system. Our launch location is covered by all major cellular providers and the first responders are approximately 3 miles away in Lucerne Valley. **ROC does not require professional on-site Fire or Medical staff.**

### Schedule of Events

ROC launches are conducted on the weekend of the Second Saturday of each month, all year. In June, October, and November, ROC conducts 2 or 3-day events running from Friday through Sunday.

	Setup Activities	Launch Activities	Clean-up Activities
<b>Monthly Launch</b>	Friday and/or Saturday Morning	Each Day 7AM-2PM	Saturday Afternoon
<b>ROCStock</b>	Thursday Afternoon	Friday & Saturday 7AM-6PM, 9-10PM Sunday 7AM-2PM	Sunday Afternoon
<b>ROctober (October)</b>	Friday Afternoon	Saturday 7AM-5PM, 7PM-9PM Sunday 7AM-2PM	Sunday Afternoon

Portable restrooms are contracted to be removed on the Monday following the event. Trash and other items are removed at the termination of the event (Saturday or Sunday).

For a Monthly Launch, there is a brief “flyer’s announcement” covering operations and general safety information. Our monthly launches are attended primarily by “regulars” so reinforcement of our procedures is all that is necessary.

For other events, a stand-up flyer’s meeting is held each morning to discuss operational procedures and safety since ROCStocks and ROCtober attract many out of town participants.

For all events, regular public addresses are made covering procedures, safety, etc...

After the start of operations, there is no set schedule. In general, operations proceed continuously along the following general lines.

All participants must register before flying. We use wristbands to control this access (see figure on prior page). Registration includes updating a liability waiver and paying the daily launch fee. Annual members update their waiver (launch fee included in membership). Registration runs continuously throughout the day and is usually suspended approximately one or two hours before we shut down the range.

Once a participant is registered and has prepared their rocket for flight, a safety check is performed by a certified flyer who wears a special yellow vest. This is the Flight Safety Reviewer (FSR). The FSR checks the rocket and motor per established NAR and Tripoli guidelines and against the NFPA 1122 and 1127 safety codes. The FSR uses a flight card provided by the flyer to log the safety check. Each flight requires a new flight card. The FSR also checks for a wristband. Finally, the FSR initials the flight card to indicate that the rocket is ready for pad assignment.

Once the rocket is safety checked, the flyer proceeds to the Pad Manager (PM) who assigns the flyer a particular pad based on the size of the motor and the launch fittings built into the rocket. The flight card is used to record the pad assignment. The Pad Manager assigns according to the safe distance requirements of NFPA 1127, §4.15.1. Depending on the number of participants waiting for pads, the PM function may be performed by the Launch Control Officer (LCO).

The participant flyer then waits until the range is opened (see below) and then proceeds to self-install their rocket on the launch pad. This activity takes anywhere from 5 minutes to multiple hours, depending on the complexity of the rocket. Once the rocket is secured to the pad and wired to the launch system, the flyer returns to the safety area and waits for their rocket to be launched.



The Launch Control Officer (LCO) controls the range and the electronic firing equipment. The LCO is responsible for restricting access to the firing range using the public address system. The LCO is responsible for assuring that the range and the air space are clear and in compliance with our safety codes and terms of our FAA waiver. The LCO takes the flight card for a particular pad/rocket combination, announces pertinent information about the flight (i.e. motor, electronics, flyer's name, etc...) and then performs a final countdown of 5 or 10 seconds (time depends on rocket size and complexity). At the end of the countdown the rocket is launched.

In the case of a successful launch, the rocket is observed by the LCO until the recovery system has correctly deployed. Once the recovery system deploys, the rocket recovery activities become the responsibility of the flyer. If the rocket recovers on the active launch range, the flyer must wait until the range is opened for activity. In the case of an off-nominal recovery deployment, the LCO suspends launch activities until the rocket is grounded.

In the case of an unsuccessful launch, the launch activities are suspended until the rocket (if airborne) is grounded safely. In the case of a mis-fire (e.g. the motor does not ignite), the launch activities continue with the next pad as the range is closed and safe at that time. Once the range is opened (after a minimum of one minute after any misfire, per safety codes) the flyers can retrieve their malfunctioning rocket.

In any case, the LCO marks the flight card with the outcome of the flight and places it into a box for storage. ROC keeps flight cards for approximately one year.

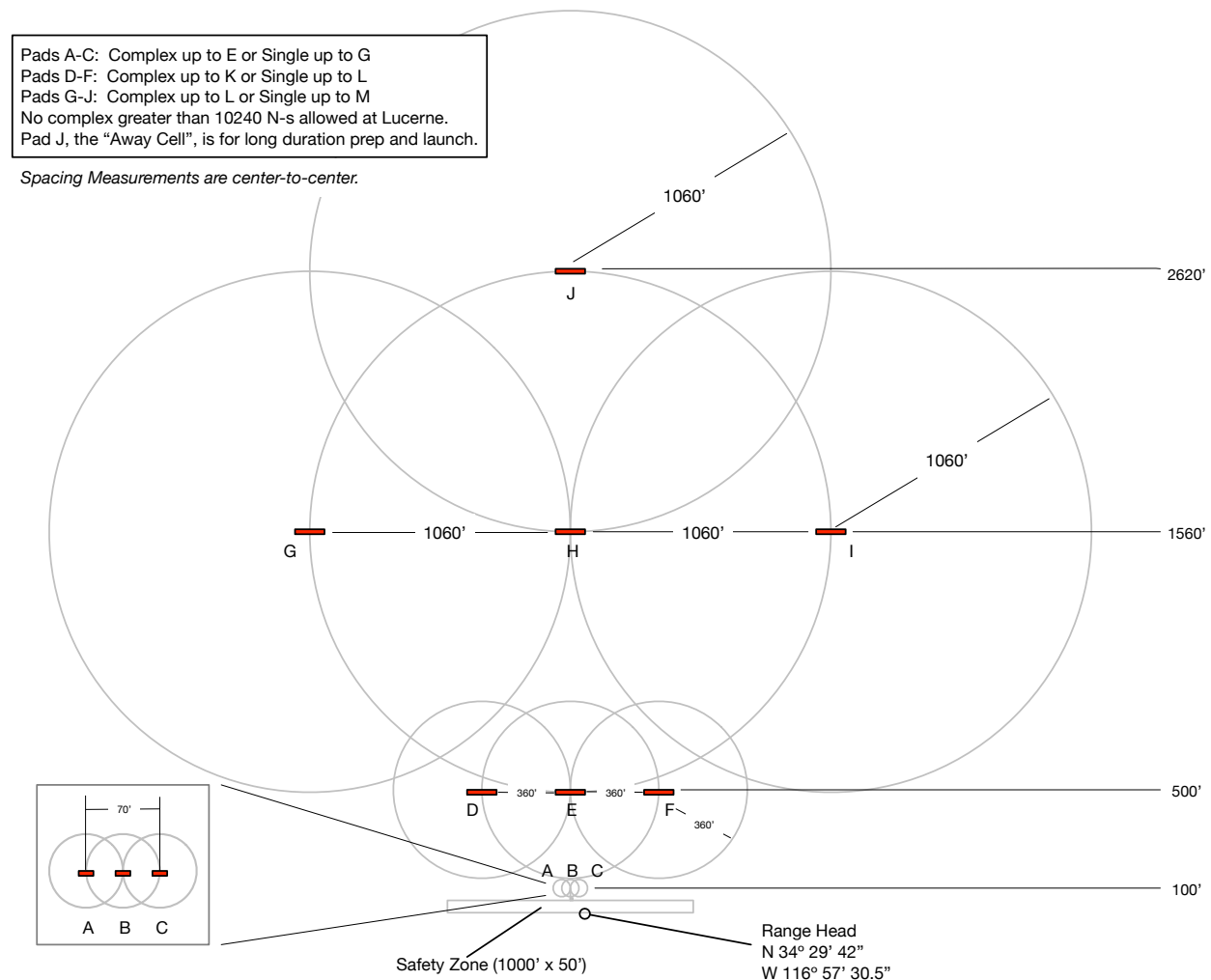
This system is scalable in that during ROCStock events where the number of flyers is high (approximately 50-70 per hour), we staff two LCO's, two to four FSR's, two PM's, and additional range helpers at the actual launch pads. At any time, however, only one LCO has the authority to launch. The other LCO acts as observer and management assistant.

In addition to these staff positions with specific responsibilities for operating the launch, there is a Range Safety Officer (RSO) who has responsibility for overall range safety and can stop the launch at any time. This person is typically "roving" and on the lookout for any unsafe conditions. Typical unsafe conditions that cause a "stop" are spectators sitting in the safety corridor (see layout map) or unauthorized personnel on the range. For example, per ROC policy, no uncertified flyers under the age of 18 are allowed beyond the low-power pads (first row) unless the range is "open for recovery".

As shown on our range map (see next page), our range is setup such that launch operations can be performed on one bank of pads while flyers are preparing rockets on other banks while still meeting the minimum safe distances per NFPA 1127.

At Lucerne, launch operations are typically completed in the afternoon each day due to unsatisfactory winds or at 2PM, whichever occurs first. On occasion, we have extended beyond 2PM, usually to accommodate a certification-type flight. In any case, our safety

code does not allow for launching in winds greater the 20 MPH. ROC maintains an



anemometer at the range head for certifying safe flying conditions when breezy.

## ROC Range Layout

### Potential Hazards

The primary potential hazards at the ROC launch site are typical for any desert location. Gullies present the primary physical hazard and generally are well established and hard to miss. Sun and heat related hazards exist during the spring, summer, and fall months while extreme cold has been recorded at some of our fall and winter launches. ROC maintains an extensive list of hazards and recommendations on our website.

Rocketry is an inherently dangerous activity, as such, we require liability waivers of all persons on the lakebed (Participants and Spectators). Nominal rocketry-related hazards include falling rockets with incompletely deployed recovery systems. ROC uses a range

layout that coordinates with the prevailing winds to keep most recovery events out of the spectator and launch range areas. Occasionally, however, a rocket deploys “over the crowd”. In this event, the LCO uses the public address system with a special horn to declare a “heads up” condition where everyone is required to cease activities, look to the sky, locate the rocket, and point to it. This allows the LCO to see if spectators are paying attention and they can then use the public address system to further issue instructions. In general, the public address system works well with both our Monthly Launches and ROCStock events. ROC operates a multi-speaker PA system with over 10 speakers in both the range and spectator areas. In addition, during ROCStock events, we broadcast our public address system on a low-power FM radio station.

For participants only, there is a hazard associated with the handling and preparation of the rocket motors and recovery system gas generators (e-matches and black powder). ROC uses safety policies enforced by the FSR such as no ignitors installed in motors until the rocket is attached to the launch pad, recovery systems must be de-energized until the rocket is on the launch pad, shuts must be used on e-matches, etc...

### **Spectator Safety**

Per the attached range layout map (see previous page), ROC manages spectators using a combination of distance, wristbands, and flag lines to keep spectators within the safer parts of the range. Per NFPA 1127, §4.16.4, we keep spectators outside of our active launch area according to the safe distances required.

### **Crew Assignments**

In general, ROC has a 9 person Board of Directors that attends every launch. In addition, we have a cadre of approximately 20 annual members that attend nearly every launch and who are available to staff our positions. All positions are staffed with persons over the age of 18 with the exception of the PM who can work under the supervision of the LCO.

Here are the roles, in some cases, the roles are shift-based and filled on an ad hoc manner during the launch. If the critical roles of LCO and RSO are not filled, launch operations are suspended. ROCStock events are pre-staffed with two hour shifts for each position. Monthly launches are ad hoc staffed by members of the ROC Board or Executive (paid) members of the club.

Range Safety Officer (RSO)	Various Persons, pre-designated per launch.
Launch Control Officer (LCO)	Various Persons, must be > 18 years old
Flight Safety Reviewer (FSR)	Various Persons must have Rocketry Certification at Level 2 or above.
Pad Manager (PM)	Various Persons
Pad Helper (PH)	Various Persons
Registration Desk	L2 Certification Desired for HPR pads ROC Board Members Only
BLM Liason	Allen H. Farrington

FAA Liason  
Security  
Emergency Services

Allen H. Farrington  
Various Board Members  
Various Board Members

**Certification**

On behalf of the Rocketry Organization of California as Authorized Agent per the ROC Bylaws, I certify that the information provided in this document, accurate, and complete to the best of my knowledge. I acknowledge that we are required to comply with the requirements and stipulations on Form 2930-1, the Operations Plan, and any additional stipulations that are required by the authorized officer when the permit was issued. I further understand that the providing of false information, or the failure to keep the form or any other permit updated, are grounds for probation, suspension, or revocation of the permit.

Applicant Signature	Date
on file with Permit Application	varies

Printed Name  
Allen H. Farrington