

FIREBALLS 001

AERO-PAC's First Experimental Unlimited Rocket Launch

by Bill Lewis

On August 19, 1991, the first experimental-unlimited launch in the Northern California/Nevada region was held by AERO-PAC, a prefecture of the Tripoli Rocketry Association. This launch followed in the tradition of the great Smoke Creek Desert launches held during the late 1970's and early 1980's, as well as of the Mojave Dry Lake launches made by several amateur rocketry organizations from about 1940 through the 1960's.

For this launch, Fireballs 001 was granted an FAA altitude waiver of 100,000 feet above ground level (AGL), which I believe is the highest altitude granted to a non-commercial rocket organization since the Rocket Research Institute launched at Smoke Creek in 1987.

The impetus for this launch came from several sources. First there were the original plans for a "Balls" launch, as conceived by Steve Buck of High Sierra Rocketry and Tim Brown of West Coast Rocketry, in a discussion during the Black Rock II Launch in 1990. This launch was planned as a limited event for rockets utilizing 1300 Newton-seconds or more of total impulse (K motor or better). The launch date was never set, although it was envisioned for summer 1991. I was brought into the picture when I was asked to support this launch with an appropriate application to the FAA for authorization and waiver. This planning started before the decision came down from Tripoli headquarters to hold LDRS X at Black Rock.

AERO-PAC was already committed to the Black Rock III Launch to be held on July 20-21, 1991, and was anxious to try out its new launch system in a full ten-pad or greater configuration, before committing to support LDRS. At the Winterfest 1991 Launch at Lucerne, Tim, Steve, and I got together briefly to discuss general possibilities, including having AERO-PAC host the launch as a non-sanctioned event, in the same manner as Lucerne was currently conducting its launches. I believe it was at this meeting that Steve suggested that the launch be held on the Monday following LDRS.

After conferring with the AERO-PAC Board of Directors, and following a short discussion

with Chuck Rogers, I sent a letter to the FAA regional control office in Hawthorne, thanking them for their support in 1990, and informing them of the intended AERO-PAC launches to be held in 1991. This letter contained the basic plans and information on the launch now referred to as "Fireballs."

The second impetus for this launch could be classified as nostalgic. I had kept in touch and made some recent contacts with several individuals within the amateur experimental rocketry community. Through this exposure, I was aware of the current activities of such organizations as the Reaction Research Society (RRS - Mojave Test Area), the Rocket Research Institute (RRI - "Rocket Research Gang"), the Pacific Rocket Society (PRS), Starflight, and the Independent Rocket Society (IRS). Tom Blazanin, former president and a founder of Tripoli, was also trying to get amateur experimental activities into Black Rock with the idea of a "Black Rock Society."

When I received a phone call from Dean Oberg of Space Delivery Systems (SDS) in Buffalo, New York, I quickly realized that Fireballs was being interpreted beyond the scope of high impulse commercial rocket motors (especially as a fallback for motors without certification, as Chuck Rogers had envisioned the launch). Apparently, the word had spread and several organizations such as SDS were looking to utilize the Fireballs launch as a site to test their "custom" motors. In Dean Oberg's case, this was a hybrid propellant motor with the capability to reach 65,000 feet altitude. In my discussions with Dean, I asked him to send me a set of drawings for presentation to the AERO-PAC Board. At the next Board meeting, the proposal was unanimously approved, under the assumption that I would handle the liquid fuel and hybrid rockets under a format different from the "standard" high power rockets flying with and without certified motors.

Shortly after talking to Dean Oberg, I received a phone call from George Morgan of the Pacific Rocket Society, who indicated that they would have a large liquid fuel rocket available that was capable of reaching 100,000 feet

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altitude. Based on information presented on these two rockets, an application for a waiver to 100,000 feet was prepared and submitted to the FAA.

As it turned out, neither the hybrid nor the liquid fuel rocket materialized for this event. Other rockets that were registered for this event ended up being launched at LDRS X. Some individuals registered for both LDRS and Fireballs, on the assumption that if Tripoli changed its mind on the motor use policy, then they would launch at LDRS; if not, then Fireballs was the answer. As it turned out, Tripoli backed down on their earlier motor certification policy and allowed motors as previously specified by an approved manufacturer to be utilized. This left Fireballs with a somewhat shortened schedule.

The first rocket on the pad was Rick Loehr's two-stage, telemetry downlinked vehicle powered by 2 L motors in the booster and one L in the upper stage. This rocket was already being prepped when Ron Devine, my son Dean, and I arrived to start the event. After receiving signed "disclaimer/release" forms from Rick and announcing the requirements for the launch over the loudspeaker, we were ready to proceed. Rick's rocket brought everyone to their feet as the twin flames from his custom Space Dynamics L motors lit up the morning sky.

Soon many rockets were being brought forward, and a link was established between the Rogers-Wood-Brennon & Co. tracking contingent and the rangehead, which was manned by ham radio operators Mark Curtis

(WE8K) and Phil Saeli (N2IWR).

Although no records were broken during this launch event, and many individuals expressed disappointment at not seeing the hybrid or liquid fuel rocket fly, most people were content with the results. These included a few like Dale March who just brought custom motors to static test fire.

I would especially like to thank Ron Devine, Dean Lewis, Bob Baker, Jay Orr, and Kelly Badger for their RSO/LCO support and for making the event run smoothly.

Currently, a second Fireballs (002) is being planned for Monday, August 17, 1992, following LDRS XI. This plan has received complete support from the Tripoli Board of Directors, who unanimously voted to support this event (through cooperation with AERO-PAC) as a follow-on to the sanctioned LDRS. In 1993, as LDRS moves eastward, the Fireballs 003 event will be planned differently, and will take on a different significance with western regional rocketeers.

In the meantime, Fireballs 002 should offer a different slate from 1991, with the Tripoli motor certification policy having been sorted out. Mark your calendars for Monday, August 17, and stay for a good time to see some interesting rockets fly! (Besides, you can drive home under better traffic conditions than during the Sunday evening rush).

The following is a list of Fireballs 001 tracking results, as compiled by Charles Rogers and Fred Brennon.

<u>Name</u>	<u>Rocket</u>	<u>Dia.</u> (in.)	<u>Len.</u> (in.)	<u>Wgt</u> (lbs)	<u>Motor(s)</u>	<u>Altitude</u> (feet)	<u>Error</u>
Bill Morrow	Ejaculator	2.13	84.0	18.00	USR L1000-25	16,376	13.6%
Sienkiewicz/Bolduc	Mach Buster	4.13	73.5	13.75	Vulcan L750	13,743	1.3%
F. Kosdon/B. Baker	Starfinder	2.80	84.0	16.00	Kosdon L1350	12,128	0.4%
Mark Clark	Swift	2.70	55.0	8.25	Aerotech K550	11,467	0.6%
F. Kosdon/B. Baker	Starfinder	2.80	87.0	16.50	Kosdon L600	11,106	0.3%
Jay Orr	Titan	2.70	72.0	10.00	USR K250	10,974	0.1%
Jim Cotriss	Experimental Ionosphere	2.26	43.5	6.50	Aerotech K250	10,826	3.0%
Neil Fishman	ARC Scorpion	4.00	72.0	13.00	Vulcan K500-15	9,297	3.0%