



SOUTHWEST OHIO ROCKETRY ASSOCIATION (SORA)

ANNUAL LAUNCH REPORT YEAR 2024

NAR SECTION #624

By Rick Forrester, SORA Vice-President

Year 2024 was a GREAT year for the club with almost all metrics improving over 2023. Refer to the spreadsheet at the end of the report. Here are the overall stats for the year:

The Club conducted 15 launch days. Only one launch day was cancelled due to weather.

There was a total of 424 rockets launched, which is up from 2023's total of 215. This is a 97% increase! Not bad! 357 of the flights were 100% fully successful from launch to touchdown. This corresponds to an overall 84.0 % success rate which is 0.3% better than 2023's. Good job everyone! We're on the right trajectory for continually improving safety. As usual, the majority of unsuccessful flights involved parachute problems.

There were 149 launch rocketeers versus 105 in 2023. A "rocketeer" is counted only once per launch date even if they launch multiple rockets during the day. 98.3% of our rockets were recovered which is again better than 2023's percentage of 97.2%. We are getting better at managing chute size, delay times, and compensating for drift. There was an increase in attendance from visitors and family members from 63 in 2023 to 211 in 2024. It is nice to share our hobby with family and park visitors.

Unfortunately, we did not have an American Rocketry Challenge team in 2024. Our regular school could not field a team this year due to several members graduating from high school. We did have one SORA rocket competition and 11 NARTEK rockets launched. Several members have completed parts of NARTREK bronze and silver. one rocketeer is working on his Gold certification.

One member completed his High Power L1 certifications while another is prepped and ready for L1. A second member took the L2 test is hoping to certify in March of 2025.

The Club improved on launching complex rockets (clusters or multi-staged). We had 3 multi-staged (versus none in 2023), and 10 clustered versus 2 in 2023 rockets being launched. We hope to get these numbers up in 2025!

The Club hosted 7 private group launches (4-H, Scouts, Homeschool, Super Saturday) launches versus only 2 groups in 2023.

Of all the launch events, there were only three very minor emergencies total from all our launches: one medical Exacto knife blade finger cut while working on a rocket in the back of a pickup truck, one 1' fire directly under the launch pad, and one rocket causing almost no damage to the hood of a rocketeer's truck during landing. No insurance claims were filed for any of the events and there were no medical transports. All emergency equipment remains in perfect working order.

Money, money, money! We took in \$552 in donations or purchases of t-shirts/mugs, food/drink. This is up from \$273 in 2023. The Club also received a \$1000 donation from the Optimus Club of Lebanon Ohio and helped pay for educator packs of rockets for "build nights" or to give rockets away at launches to first time rocketeers.

Ah! On to motors! Or is it engines??? Don't get me started on that debate!

The sum of Total Impulse of motors used in 2024 increased from 2023 as rocketeers gained more experience and felt more comfortable going with higher impulse. We went from a yearly Total Impulse of 3595 in 2023 to 5325 Newton-Seconds in 2024. . This is a 48% increase! Well done!

There were increases from yr 2023 in all power levels of motors with "C" motors showing the biggest increase. As our field is only rated for low and mid-power (up to and including G motors) due to a nearby airport, we did well. Our official HPR launches are conducted at Dayton's Wright Stuff Rocketeers field up in Cedarville, Ohio. Bob, who certified at L1, performed multiple test launches of F and G motors at our Hisey Park field prior to launching L1 officially up north.

I guess I have to report on, um, failure modes. So sad.... We do have to report that there were two launches where the failure modes were not recorded, so the number of failures may be higher. These were off schedule launches.

As typical of every year since we started keeping records, parachute issues were number one with 35 of our rockets having had chute issues. Lack of ejection (11), shroud line tearout or tangle (10), shock cord to parachute failure (6), failure to unfurl (7), and parachute burnt to a crisp (1) (improper wadding).

Motor and retainer issues were next with 23 failures. Motor ejected or failed ejection charge resulting in non-separation of rocket (10) was the highest M/R issue. Too low/too high impulse/no ignition of 2nd or 3rd stage was 7, motor CATO 5 (several motors and rockets were replaced by Estes free of charge), and retainer/thrust ring issues was 1.

Rockets stuck during launch on rod had four events. We sand the rods and rails prior to beginning the launch day but, for some reason, we had carbon buildup several times.

Remaining failures were improper Cg/Cp (2), body tube separating prematurely or incorrectly (1), rockets lost to trees/weeds or hitting on hard concrete (5).

Overall, these were pretty typical failures. We did fall short of our stretch goal for perfect flights of 90%.

Many thanks for all the help given by [REDACTED] Robb our President! He did an incredible job maintaining our great relationship with the Hisey County Park Board where we launch, working with the Lebanon Library who helps sponsor the club by allowing space to meet, interfacing with NAR, and helping with launch site prep and operations. Thanks also to all the volunteers who helped with Range Safety, Launch Control, setting up, breaking down, and spreading the wealth of knowledge around to all the new rocketeers (and even some of us old rocketeers still eager to learn)!

If you have ideas for year 2025, let us know. We are always open to suggestions.

Stay posted and look for announcements regarding meetings at the Lebanon Library and special events. Website: <https://rocketryohio.com>

Our club motto – “Sapientia ducet ad astra” – Wisdom leads to the stars!

DATE	# Launches	# 100%Fully Successful Flights	% Successful	# Rockets Recovered launched this day	% Recovered	Launch Participants	# Family /Friends / Observers	SORA Competitions	NARTREK Launch Attempts	Clustered	Multi-staged	TARC Launch Attempts	# Groups: Scouts 4-H Home School SuperSaturday
1/7/2024, weather cancel no launch													
2/11/2024	39	32	82	38	97	25	20	0	1	0	1	0	1
3/17/2024	15	10	67	15	100	7	8	0	0	0	0	0	1
4/7/2024	17	16	94	17	100	4	3	0	0	0	0	0	0
5/12/2024	34	32	94	34	100	10	6	0	0	0	2	0	0
5/19/2024	32	30	94	32	100	11	11	0	0	0	0	0	0
6/9/2024	22	15	68	20	91	7	6	0	0	0	1	0	2
7/2/2024	9	8	89	9	100	3	1	0	0	0	0	0	0
7/7/2024	41	39	95	40	98	12	3	1	0	0	2	0	0
8/11/2024	27	22	81	26	96	9	34	0	0	0	0	0	1
9/8/2024	37	31	84	36	97	9	5	0	7	1	1	0	0
10/5/2024	32	29	91	32	100	5	100	0	1	0	2	0	0
10/9/2024	31	25	81	30	97	16	1	0	2	0	1	0	1
11/16/2024	36	24	67	36	100	15	6	0	0	1	0	0	1
11/17/2024	31	25	81	31	100	7	2	0	0	0	0	0	0
12/8/2024	21	19	90	21	100	9	5	0	0	0	0	0	0
TOTALS	424	357	84.2	417	98	149	211	1	11	2	10	0	7

Motors														
1/4A	1/2A	A	B	C	D	E	F	G	H	I	Ground Fires	Medical Incidents	Damage to Vehicles or Buildings	Donations / purchases
0	0	22	4	7	2	4	1	0	0	0	0	0	0	\$19.00
0	0	8	4	1	0	1	0	0	0	0	0	0	0	\$60.50
0	0	0	6	11	0	0	0	0	0	0	0	0	0	\$0.00
0	0	7	4	12	7	1	2	1	0	0	0	0	0	\$61.00
0	1	8	6	11	5	1	0	0	0	0	0	0	0	\$0.00
0	1	2	4	3	3	3	5	1	0	0	0	0	0	\$48.00
0	0	2	4	1	1	0	0	1	0	0	0	0	0	\$15.00
0	0	12	11	14	6	0	0	1	0	0	0	0	0	\$75.25
0	1	2	6	10	2	5	1	0	0	0	0	0	0	\$42.00
0	4	5	10	9	5	3	1	2	0	0	1	0	0	\$69.00
0	0	3	9	22	4	5	2	0	0	0	0	0	0	\$40.00
0	0	2	1	25	1	1	1	0	0	0	0	0	0	\$0.00
0	0	15	6	10	5	0	1	0	0	0	0	0	0	\$101.00
0	0	8	7	11	2	1	0	2	0	0	0	0	1	\$20.50
0	1	6	2	9	1	2	0	0	0	0	0	1	0	\$1.00

	FAILURE MODES															
	PARACHUTE						MOTOR				CONSTRUCTION					OTHER
DATE	not ejected (stuck in tube)	shroud line tangle or ripout	shockcord broke or chute separation from cord	improper chute size rocket drift loss	no unfurl	payload destroyed or no deploy of separate payload chute	CATO, motor issue	retainer or thrust ring	fail ejection charge, motor ejected	too low/high impulse, no ignition 2/3 stage	unstable flight Cg/Cp	bodytube sep from nose cone or payload section, not parachute or cord issue	fin or other loss during flight	tube/rail button loss	stuck on rod/rail	MISC (lost to trees, high weeds, land on concrete complete destruction, etc)
1/7/2024, weather cancel no launch																
2/11/2024	1	1	2	0	3	0	0	0	0	0	1	0	0	0	0	1
3/17/2024	0	0	0	0	2	0	0	0	0	2	1	0	0	0	0	0
4/7/2024	NR															
5/12/2024	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0
5/19/2024	NR															
6/9/2024	0	0	0	0	0	0	2	0	1	2	0	0	0	0	0	2
7/2/2024	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7/7/2024	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8/11/2024	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
9/8/2024	2	1	0	0	0	0	1	0	2	1	0	0	0	0	2	1
10/5/2024	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
10/9/2024	1	1	0	0	1	1	0	0	1	0	0	0	0	0	1	0
11/16/2024	1	5	1	0	0	0	1	1	2	1	0	0	0	0	0	0
11/17/2024	2	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0
12/8/2024	1	0							2							
TOTALS	11	10	6	0	7	1	5	1	10	7	2	1	0	0	4	5









Thanks for a GREAT YEAR!

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