2024 MSU Nationals SO Flight Practice/Clinic - National Free Flight Society

May 24, 2024

- **"DAY BEFORE NATIONALS" Flight Practice & Clinic for Nationals contestants - Friday, May 24, 2024 in the Div B and Div C competition gyms; Michigan State University IM Sports Circle Building upper and lower gymnasiums from 10 am – 4:00 pm.**

- **Welcome (lower gym) – Dave Lindley (NFFS President)**

- **Intro & rubber winding demo (lower gym) - Coach Brian (Coach of 7 Michigan State Flight Champions and 24 medalists since 2013 - NFFS Youth Development Committee)**

- **Clinic objectives – get some flying in and learn best practices (10 min)**

    - **Airplane trim parameters – 5 settings must be correct: CG, decalage, stab tilt, tailboom offset, left wing washin; fix any warped surfaces (see NFFS resources link below; "Look Here First"/"Building" tab).**

    - **Rubber winding for max flight time is the #1 focus for improvement**
        - **Focus on 5 parameters**
            - **Max torque, Max turns, backoff turns, launch torque, climb height, turns remaining**
        - **Winding demo video: https://www.youtube.com/watch?v=_MCNDiLF06I**
        - **Max turns calculator for any rubber length & weight, NFFS website "Flying": https://www.freeflight.org/science-olympiad/science-olympiad-resources/**

    - **Testing methodology – Standard progression of 5 steps**
        1. **Initial flights for new, repaired or significantly retrimmed airplane: 40% max turns trim check flight(s); correct trim issues, repeat till gently climbing (not stalling, rolling or diving) and circle size is 20-25 ft**
        2. **Next flight: medium density rubber wound to 80% max turns and full torque; backoff to low launch torque (0.25 - 0.30 inch ounces approx.)**
        3. **Subsequent flights: always to 80-90% max turns and full torque and backoff fewer turns for slightly higher launch torque each flight.**
        4. **Each flight increase launch torque 0.02-0.05 in oz. Climb height is a linear relationship to launch torque for each rubber motor density.**
        5. **Log data for every flight (see NFFS link above for sample logs)!**

    - **Use available resources - Scioly.org forum, SO Flight Discord channel, NFFS website and Youtube channel**