Centrifuge Testing

Atheris: A Revolutionary Anti-G Suit System

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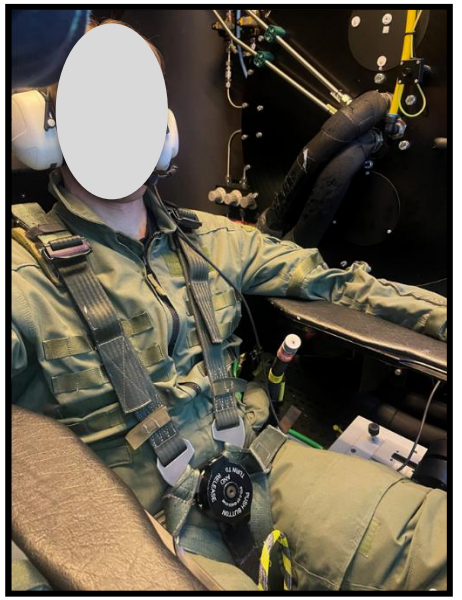
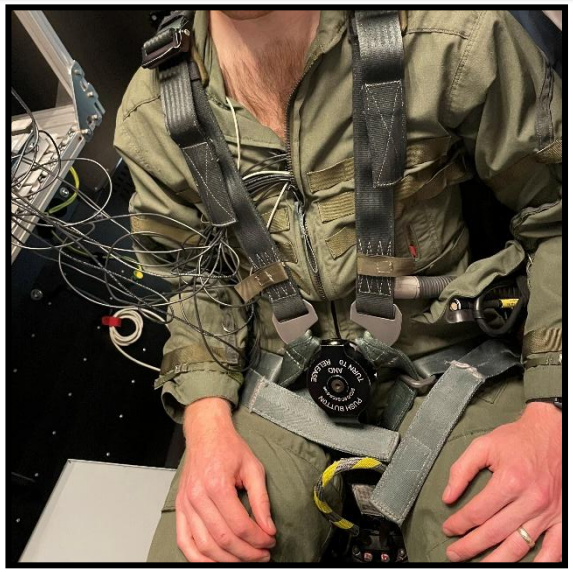
Centrifuge Testing

- Extensive centrifuge trials on multiple suit sizes
  - >150 runs on multiple separate occasions
    - Validation
    - Optimization
    - Confirmation
  - >16 subjects, including:
    - F-35 pilot
    - Typhoon pilots
    - Hawk pilots
    - Highly experienced centrifuge subjects (Anti-g suit researchers with thousands of centrifuge runs)
- Most runs have been performed up to 9 Gs
- High-onset rate (6 g/s) and low onset runs performed
- Testing performed in multiple configurations
  - With and without pressure breathing
  - With and without chest counterpressure



Centrifuge Testing Results

- Atheris provides ~10% greater G tolerance as compared to current state-of-the-art Anti-G suits (Full Coverage)
  - Quantified by peripheral light loss and other quantitative measures (pending publication)
  - This result was expected, based on the nature of the architecture (100% coverage of the lower body)
- Free volume comparable to state-of-the-art Anti-G suits (Full Coverage)
  - Varies by size, ~2/3 scf
- Inflation rate comparable/slightly faster than state-of-the-art Anti-G suits (Full Coverage)
  - Gas is free to flow down the legs – no restrictions



Centrifuge Testing Results

- Notable qualitative results from centrifuge testing
  - Significant reduction in workload
    - Subjects do not need to strain as hard at all G levels
    - Reduced need for AGSM at 6-9G
    - Some subjects did not need to perform AGSM at 9G
  - Significant reduction in sweating
    - Combination of lower workload, and lower thermal burden
  - Increase in comfort
    - With proper fit, no pressure points or hot spots
      - One test pilot questioned whether the suit was even pressurized during a centrifuge trial (it was!)
    - Subjects remained in the suit between runs (by choice)
  - Subjects appreciated the active cooling in the lower legs
    - One test pilot noted that with Atheris he would intentionally pull a few Gs to get some cooling down in his lower body