Section 10:

Implications for Microgravity Experimenters

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Available Microgravity Carriers

- Drop Towers
- Parabolic Flight Aircraft (KC-135)
- Sounding Rockets
- STS Orbiters
- Free-flyers
- International Space Station

Experiment Location and Orientation

- **proximity to carrier / vehicle center of mass**
  - sensitivity to quasi-steady variations
- **proximity to other equipment**
  - sensitivity to vibration sources
- **alignment**
  - sensitivity to quasi-steady acceleration direction

Carrier Attitude

- **issues related to experiment location**
  - gravity gradient effects
- **issues related to experiment orientation**
  - design attitude that points experiment in desired direction
- **sensitivity to quasi-steady variations with time**
  - atmospheric drag effects
  - local vertical / local horizontal attitudes versus inertial attitudes

Accelerometer Selection

- **frequency range**
  - cutoff frequency based on experiment sensitivity
  - sampling rate and filter characteristics specified by accelerometer system team to provide frequency selected by experimenter

- **location and alignment**
  - close to experiment sensitive location
  - mounting technique
  - away from sources which may disturb accelerometer and mask disturbances of interest
  - knowledge of sensor orientation relative to experiment axes

Experiment Timelining

If at all possible, schedule your experiment operations to avoid any activities which might negatively impact it. Keep the following points in mind:

- **experiment sensitivity to acceleration sources**
  - quasi-steady, vibratory and transient
- **crew exercise**
- **thruster activity**
- **other experiment operations**
- **crew activity**
- **venting**