

Space Hardware Design Fall 2003

ASEN 5519

09/23/03

Name: _____
 First Name – Last Name

Unique Identifier: _____
 (pick 6 random numbers/letters)

Task 1 – Interface Definition:

From the middeck IDD, please assess the available power, mass and volume, as well as the possible / available means for heat rejection, for your single middeck locker experiment that you are designing.

Mass: _____
 Power: _____
 Volume _____
 Heat Rejection options: _____

Reference:

Middeck IDD: <http://www.unitedspacealliance.com/icd/mdkidd/contents.html>
 Shuttle Payload IDD <http://shuttlepayloads.jsc.nasa.gov/data/PayloadDocs/PayloadDocs.htm>
 Spacehab IDD http://www.boeing.com/nosearch/sh_verification/

Task 2 – Microgravity Environment:

As a money-starved biologist unable to afford a real spaceflight mission, what are your options to conduct a microgravity biology experiment that simulates at least SOME aspects of microgravity. List options for simulation, and what aspect of the microgravity environment they simulate. At minimum, list one example each for cell biology, plant biology, human health, combustion research, materials science and fluid physics. Please list your reference (web site, book, article....)

	Sim. Technique	Aspect Simulated	Experiment Duration
Cell Biology			
Plant Biology			
Human Health			
Materials Science			
Combustion			
Fluid Physics			

Task 3 – Safety:

A hazard report attempts to a) describe a hazard, b) its cause, c) a hazard control, and d) a verification of the designed control.

Pick an example from everyday life (shower, espresso machine, bicycle pump / tire inflation, driving your car, refueling your car, mountain climbing, rock climbing,. Walking your dog, playing with your cat,..) and:

a) list all applicable generic hazards associated with this activity/design/hardware (per NASA form 1230).

b) list one example of a unique hazard associated with this activity/design/hardware.

Use the PSRP documents with respect to content (title, description, control, verification), not format (i.e., don't need to use the forms listed below under references).

Reference:

PSRP:

<http://jsc-web-pub.jsc.nasa.gov/psrp/>

Generic Hazards

<http://jsc-web-pub.jsc.nasa.gov/psrp/docs/jscf1230.doc>

Unique Hazard

<http://jsc-web-pub.jsc.nasa.gov/psrp/docs/jf542b.doc>