



# Mission Specialist's Log

## Instructions

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Dear Specialists-in-Training,

Soon you will be assisting the astronauts on board Space Station Alpha. You will be assigned to a specialized team that will have many unique jobs. Even though all the teams will be performing different tasks, you all must work together towards a common goal.

Your responsibilities will be many, but it is very important to keep a couple of questions in mind:

**If a solar storm occurs, what are the hazards to the space station astronauts?**

**What steps should be taken to minimize the hazards?**

Part of your responsibility as a specialist is to keep a log of your facts and data. You don't want to forget any details that might be necessary during a crisis. You may want to write down new words that you have learned or new concepts. You may also want to draw pictures, or jot down an idea or another question that you may have. Just remember that we need you to have some answers to the questions above when the mission begins.

Good luck.

Sincerely,

*Mark E. Lindsay*

Commander Lindsay,  
Flight Director  
Mission Control  
Johnson Space Center  
Houston, Texas

## How to Make Entries in Your Specialist Training Log

### For each entry:

Keep in mind the below “Guiding Issues” as you answer each question.

**Guiding  
Issues:**

*If a solar storm occurs, what are the hazards to the space station astronauts?  
What steps should be taken to minimize the hazards?*

1. Write your name, the date, and the Specialist Training Chapter number at the top of the paper.
2. Write down a brief summary of three (3) science concepts that you just read about or discussed in class. The science concepts you choose should be important for your training as a specialist. Following your notes on each concept, describe how it is related to, or effects the space station. You may draw a rough sketch if that helps.
3. Please write 2 sentences about why the activities in this Chapter are important to your training. Remember there are no wrong answers.
4. Complete this sentence: These activities were important because...
5. Complete this sentence: These activities helped me to learn...
6. Think about additional questions you have that have not been answered about the Chapter’s topic. Please write a question you still have and would like to have an answer to. You may do so by completing this sentence: I still wonder about...
7. Complete the “Measure of Mission Readiness” on the next two pages- once for every Chapter in the Specialist’s Training Manual, and turn this in. When you are done, you will have completed it four times. By the fourth time, your answers will show how well you are ready for the mission.

Name \_\_\_\_\_

Date \_\_\_\_\_



## Measure of Mission Readiness

Astronauts go through rigorous training to be qualified for an expedition. One thing they must understand before a mission is the dangers they might encounter and how to avoid danger.

### Mission Operations

Station Electronics and Power Components

Circle the 6 the most important things an astronaut needs to know about in order to avoid a **power or electrical system emergency**. Please circle no more or no less than 6.

- Watts
- Batteries
- Electrons
- Iron filings
- Ohm's law
- Transformers
- Radio signals
- All about fuses
- Photovoltaic cells
- Resistance in a circuit
- Latitude and longitude
- What wires are made of
- Lightning from the atmosphere
- How to navigate using the stars
- The chemical reactions that start fires
- Components which consume electricity
- How to generate electricity from the earth's atmosphere
- How much electricity a human being consumes in one day

### Life Support

Station environmental controls: Oxygen generation, Air contaminant removal

Circle the 6 the most important things an astronaut needs to know about in order to avoid a **life support emergency**. Please circle no more or no less than 6.

- Odor
- Hypoxia
- Boyle's Law
- Station altitude
- Photovoltaic cells
- Manual air pumps
- Radioactive particles
- Carbon dioxide removal
- Gravitational acceleration
- Millimeters of hemoglobin
- Atmospheric removal units
- Excessive methane production
- Standard temperature and pressure
- Extra vehicular activities (EVAs)
- Partial pressure of atmospheric components
- Oxygen and carbon dioxide exchange in the lungs
- How to generate oxygen from the earth's atmosphere
- How much pressure a human being consumes in one day
- Components which regulate atmospheric composition

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### **Radiation Health**

Protecting the health of astronauts from radiation

Circle the 6 the most important things an astronaut needs to know about in order to avoid a **radiation health emergency**. Please circle no more or no less than 6.

- Magnetism
- Dose limits
- Marie Curie
- Rad and rem
- DNA mutations
- Partial pressure
- Ionizing radiation
- Shielding principles
- Solar particle events
- Radiation fall-out shelters
- Gravitational acceleration
- How nuclear fusion works
- Proper use of microwave tools in space
- Production of X-Rays from the Earth's core
- Radioactive components in soil found on the moon
- Radioactive components in soil found on the Earth
- How to remove radiation from the Earth's atmosphere
- Components which regulate radiation production on the station

### **Space Weather**

Monitoring space weather conditions

Circle the 6 the most important things an astronaut needs to know about in order to avoid a **space weather-related emergency**. Please circle no more or no less than 6.

- Solar flares
- Infrared filters
- Lead shielding
- Solar shielding
- Van Allen belts
- Photovoltaic effect
- Solar prominences
- Solar particle events
- Galactic cosmic rays
- Radioactive particles
- The earth's lithosphere
- Coronal mass ejections
- Electromagnetic waves
- Solar photon production
- The earth's magnetosphere
- How to navigate using the stars
- High frequency radio transmissions
- How carbon becomes space plasma
- Space weather prediction instruments on the space station