

# Rendezvous with a Comet Student Jobs



## Communications Team

### How Do I Do My Job?

If you are selected to be a mission specialist on the Communications (COM) Team, you will be the verbal link and manage messages that are being sent between Mission Control and the spacecraft. Your assignment will involve reading, speaking, listening, prioritizing and organizing information.



## Vocabulary I Need to Know:

- data – information collected by the teams on the spacecraft during their research and/or experiments
- encoded – changed into code so that it can be read by a computer
- forward – to move ahead, send on
- image – a computer picture of equipment or materials used by a team in the spacecraft
- incoming – coming in from another location
- outgoing – going out to a different location
- reply – a response to a statement, message or question

## What I do:

<b>Spacecraft</b> Send messages to Mission Control Receive messages from Mission Control Manage outgoing messages Forward messages to MC teams	<b>Mission Control</b> Send messages to the spacecraft Receive messages from the spacecraft Manage outgoing messages Forward messages to SC teams
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## On the Job:

- When you have completed sending a message, say, "over."
- Make sure that you can read and understand a message **before** you begin sending it.
- Make sure the team is ready to receive the message **before** you say, "we are ready to receive."



# Rendezvous with a Comet Student Jobs

## Space Weather Team

How Do I Do My Job?

If you are selected to be a mission specialist on the Space Weather (SW) Team, your mission will be to monitor the sun and predict space weather. Your assignment will involve reading, recording, graphing and analyzing data.

## Vocabulary I Need to Know:

- coronal mass ejection (CME) – vast magnetic bubbles of plasma that erupt from the Sun's
- corona and travel through space at high speed.
- Earth's magnetosphere – a protective cocoon around the Earth. It shields the Earth from the solar wind.
- solar storm – a disturbance on the surface of the Sun.
- solar wind – a constant stream of tiny charged particles coming from the sun.
- sunspots – are temporary dark, cool regions of concentrated magnetism on the surface of the Sun.

## What I Do:

**Spacecraft**

Monitor space weather  
Observe a model of the earth's magnetosphere  
Send and receive messages

**Mission Control**

Monitor space weather  
Predict space weather  
Send and receive messages

## On the Job:

- A solar storm could be hazardous to the health of the astronauts.
- A solar storm could interfere with technology and communication systems.
- Record and analyze data carefully.

# Rendezvous with a Comet Student Jobs

## Isolation Team

### How Do I Do My Job?

If you are selected to be a mission specialist on the Isolation (ISO) Team, your mission will be to work with and monitor radioactive materials, hazardous chemicals, and meteoroids. Your assignment will involve reading, writing and using robots.



## Vocabulary I Need to Know:

- balance – an instrument used to determine mass
- cpm (counts per minute) – the number of radioactive particles striking the sensor of a Geiger counter during each minute
- filter – a device used to remove impurities from the air
- Geiger counter – a device used to measure radioactivity
- isolation chamber – an airtight, sealed work area
- radioactivity – a natural property of some materials that causes them to emit sub-atomic particles (high levels of radioactivity are hazardous to living things.)

## What I Do:

**Spacecraft**

Monitor chemical bottles  
Test for radioactivity  
Test for UV radiation  
Send and receive messages

**Mission Control**

Collect, record & analyze data  
Monitor hazardous materials  
Send and receive messages

## On the Job:

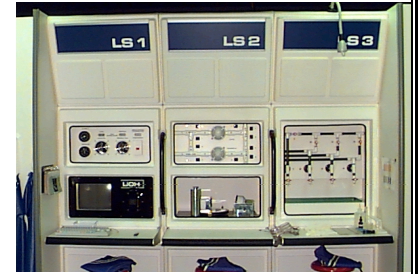
- Spend time practicing basic robot operation **before** beginning material retrieval.
- Ask for help with the robotic arm if necessary.

# Rendezvous with a Comet Student Jobs

## Life Support Team

How Do I Do My Job?

If you are selected to be a mission specialist on the Life Support (LS) Team, your mission will be to monitor and maintain all life support systems aboard the Spacecraft, including air temperature, pressure and quality, water quality and power systems. Your assignment will involve reading, conducting experiments and writing messages.



## Vocabulary You Need to Know:

- ammeter – a device for measuring electrical current
- barometer – an instrument for measuring air pressure
- beaker – a laboratory measuring cup
- environmental condition – includes the temperature, air pressure, and humidity
- graduated cylinder – a lab device for measuring liquids
- humidity – the amount of moisture in the air
- hygrometer – an instrument used to measure relative humidity
- ma (milliamp) – one millionth of an ampere (a unit of electrical current)
- mL (milliliter) – one thousandth of a liter (a unit of volume)
- pH – a number that tells how acidic or basic a liquid is
- ppm – parts per million
- TDS – total dissolved solid; how much material is dissolved in water
- valve – a device used to control the flow of air or water

## What I Do:

**Spacecraft**

Perform water tests  
Take readings from LS systems  
Test solar filters  
Send and receive messages

**Mission Control**

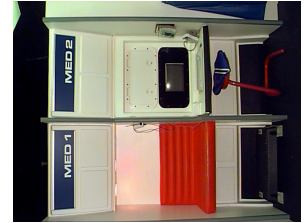
Collect, record & analyze data  
Monitor support systems  
Send and receive messages

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## Medical Team

How Do I Do My Job?

If you are selected to be a mission specialist on the Medical (MED) Team, your mission will be to perform non-invasive medical tests on Spacecraft crew and report the results to Mission Control. Your assignment will involve reading, observation, experimenting and communicating.



## Vocabulary I Need to Know:

- auditory reaction time – the length of time it takes to react to sound
- blood pressure – the force of the blood on the walls of the blood cells
- pulse rate – the number of heart beats per minute
- skin temperature – external body temperature
- visual reaction time – the length of time it takes to respond to something a person sees

## What I Do:

**Spacecraft**

Test for response time  
Measure blood pressure & heart rate  
Measure skin temperature

**Mission Control**

Collect, record & analyze data  
Monitor crew health  
Send and receive messages  
Send images as needed

## On the Job:

- Be sure to compare test results to information found during your research.
- If an astronaut's test results are outside a healthy range, have them re-tested.

# Rendezvous with a Comet Student Jobs

## Navigation Team

How Do I Do My Job?

If you are selected to be a mission specialist on the Navigation (NAV) Team, your mission will be to use the computer to locate and triangulate the positions of celestial objects in space. Your assignment will involve reading, calculating and using point-to-point communication with a headset.



## Vocabulary I Need to Know:

- declination – similar to latitude on Earth, the location of a celestial object in space.
- main rockets – principal rockets used for thrust and main flight
- retro rockets – rockets that produce thrust in the opposite direction of flight; aid in reducing speed or changing flight direction
- right ascension – similar to longitude on Earth, the location of a celestial object in space.
- triangulation – calculation of position of the spacecraft from three known objects
- trajectory – the path a falling object follows

## What I Do:

**Spacecraft**

Locate comet  
Triangulate position  
Test for particle density  
Use point-to-point headset

**Mission Control**

Collect, record & analyze data  
Send instructions to spacecraft  
Use point-to-point headset

## On the Job:

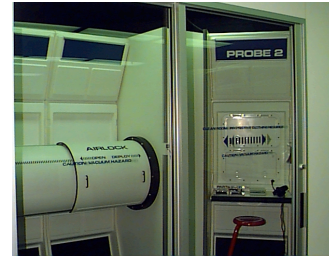
- Remember that you need to give clear instructions over the headset.
- Be sure to record all coordinates, angles and necessary data on your Data Log.
- The NAV SS team **must listen closely** to all instructions from their NAV MC teammates.

# Rendezvous with a Comet Student Jobs

## Probe Team

### How Do I Do My Job?

If you are selected to be a mission specialist on the Probe (PROBE) Team, your mission will be to build all probe instrument packages to launch into the comet. Your assignment will involve reading, speaking and participating in point-to-point communication with a headset.



## Vocabulary I Need to Know:

- airlock – a sealed chamber where the probe is kept
- ALF camera – Alternate Line Focus camera; allows Mission Control a closer view of probe motherboard
- component – an electronic part that is plugged into the motherboard
- deploy – to release an object
- motherboard – the base an assemble point for all probe parts
- multiplexer – accepts signals from all probe components
- power supply – supplies power to probe
- test cable – a wire which carries electricity from one component to another
- video processor – transmits images from probe

## What I Do:

**Spacecraft**

Mass probe components  
Assemble probe motherboard  
Deploy probe  
Use point-to-point headset

**Mission Control**

Collect, analyze & record data  
Direct probe assembly  
Use point-to-point headset

## On the Job:

- ✓ Unless an authorized person is entering or exiting the probe room, the clean room doors must be kept closed.
- ✓ Be sure to listen carefully to instructions you receive over the headset.

# Rendezvous with a Comet Student Jobs

## Remote Team

### How Do I Do My Job?

If you are selected to be a mission specialist on the Remote (REM) Team, your mission will be to retrieve and conduct experiments on meteorite samples and greenhouse plants.



## Vocabulary I Need to Know:

- balance – an instrument used to measure mass
- chromatography – process by which a chemical mixture carried by gas or liquid is broken into separate components
- density – the distribution of a quantity per unit of volume
- glovebox – a self-contained mini-lab; used to protect delicate experiments
- luster – a measure of being shiny or dull
- magnetic – possessing the ability to attract
- mass – the amount of matter in an object
- texture – visual or tactile surface characteristics and appearance of an object
- volume – the amount of space an object takes up

## What I Do:

### Spacecraft

Use robotic arm  
Observe meteorites  
Measure mass and volume  
Inspect plant samples

### Mission Control

Collect, record & analyze data  
Classify rocks  
Identify plant samples

## On the Job:

- Practice robot arm operation for several minutes before beginning your assigned tasks.
- Record and analyze data carefully.



# Rendezvous with a Comet Student Jobs

## Public Relations

### How Do I Do My Job?

If you are selected to be a mission specialist on the Public Relations Team, you will be responsible for recording mission events on paper and with photographic equipment. Your assignment will involve writing, interviewing crew members, listening and using photographic equipment.



## Vocabulary I Need to Know:

- camera – a device used to capture and record a still image on film
- camcorder – a device used to capture and record moving images on film
- digital camera – a device used to capture and record a still image in computer-ready format
- monitor – a screen that shows computer activity or a video of a team at work
- zoom – to make subjects appear larger in the video viewing screen

## What I do:

**Spacecraft**

Interview crew members  
Take pictures/video footage  
Record & describe mission events

**Mission Control**

Interview crew members  
Take pictures/video footage  
Record & describe mission events

## Public Relations Team Reminders:

- Prepare interview questions before the day of the mission.
- Hold the cameras very steady.
- Work as a team to decide what pictures/video to take.
- Take pictures of teams who are very involved in their jobs.