

OPERATION

LEAPFROG FLIGHT MANUAL

CORPORATE TEAM
TRAINING

PREPARATION FOR an EXPEDITION TO THE
MOON AND MARS



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Chevron Expedition Center Program

This packet is pre-visit material for a **Corporate Expedition** at the **Houston Museum of Natural Science**.



TO TEAM LEADER

Dear Team Leaders,

Thank you for booking your team building activity at the Expedition Center in the Houston Museum of Natural Science. This packet will help you prepare your group for *Operation: LEAPFROG* to the Moon and Mars, or *Mission to Mars*.

Please use the enclosed material to help prepare your group for their activity. The packet is divided into three sections: "**Must Do**" contains the minimum preparation necessary that should be done before the day of your activity, "**Optional Preparation**" will involve the participants in the preparation, and "**Fun Stuff**" to extent the activity.

If at any time you have questions, call **713-639-4736** or email **expedition@hmns.org**. You are welcome to visit the center beforehand, just set up an appointment.

We hope you will find the Chevron Expedition Center Program the most unique and valuable team building experience available to companies. If you agree, please refer us to your co-workers or other companies. You may not know that HMNS is a private non-profit organization that relies on entrance fees and no government funding to stay open for the Houston community. The fee you pay for your activity helps us do that, and also helps the Expedition Center train the scientists, engineers and co-workers of the future in our student expedition.

Many companies require a safety review for employees at a new location:

The entire Center is handicapped accessible, with restrooms close by. In the activity, there are simulated emergencies on board the space ship. The simulation alarms are clearly different from a true alarm. In case of a true emergency, the Expedition staff will give directions. The Center can be evacuated to the outdoors in less than two minutes.

We look forward to your visit!
The Expedition Center Staff

The Expedition Center Program is generously supported by Chevron.

CONTENTS

MUST DO

Flight Overview

An outline of your time at the Expedition Center.

Team Assignments

This chart will show which teams should be used for your group size.

Team Descriptions

This is a list of job description and skill sets for each position. Review the job descriptions and choose who is best for each job.

Crew Manifest

Use this to make a list of job assignments.

OPTIONAL PREPARATION

Personality Assessment

Based on the Myers-Briggs test, this will help you match up participants to the teams they would prefer. Use this method of assigning teams if the person making the assignment does not know the participants.

FUN STUFF

Job Interview

This application and evaluation is recommended for participants early in their careers, such as internship programs.

Crew Patch

Just as every NASA Mission has a patch, your group can design a crew patch for you expedition. Create a patch that represents your group or company and bring it with you to the Expedition Center. Your patch will be displayed for years to come as part of the more than two decade long legacy of simulated space flight.

MISSION OVERVIEW

When you arrive at HMNS, your group can gather in the main lobby area. Expedition Center staff will meet you there. Payment can be made at the Box Office at this time. Free parking is limited outside the museum along the street, or you can park in the garage for a fee. (Go to www.hmns.org, find *Visit* under the *Museum Info* tab for current rates as well as driving directions.) Entrance to the General Exhibit Halls is included in the activity fee. You may allow your participants to arrive early or stay late to explore the Museum. (Exhibits close at 5:00 or 6:00 PM depending on the season.)

Two “Flight Instructors” will work with your group. To start the expedition, one of the staff will give a “flight briefing” in which the scenario, goals, and team responsibilities will be reviewed. Then the participants will be given specific instructions on how to do their jobs. The Chevron Expedition Center Program at HMNS has developed a unique mission scenario that incorporates activities on both the Moon and Mars. We call it *Operation: LEAPFROG Lunar Exchange And Preparation For Research On-Going*. As the flight starts, the participants acting as Mission Control are stationed on the Moon in New Tranquility Base in the year 2076. The astronauts will leave Earth orbit and travel to the Moon to take over New Tranquility Base. Along the way they must conduct several experiments and work to complete the first half of the flight. Once they arrive on the Moon, the astronauts and mission controllers will trade places. The crew that has been on the Moon will continue the work as they travel to Mars. Through the journey, there may be problems or emergencies that the crews will have to work through such as high radiation, explosive gases, power blackouts, air system malfunctions and more. The flight ends with the landing on Mars, and finally with a debriefing.

The goal of the debriefing will be to compare what the group did during the flight to real-world, on-the-job situations. We will discuss how teamwork, communications, and problem-solving skills were used in the activity and how they are important at work. All participants will be invited to share their thoughts and ideas in order to create a more productive environment in the workplace, and team leaders are especially welcome to have input in the debriefing.

TEAM ASSIGNMENTS – FULL GROUP

If your group is doing the full flight to the Moon and Mars, use this chart to determine which team jobs will be used for your group size. Each team will be split – half on the space ship (Alpha Crew) and half in Mission Control (Beta Crew).

# of Participants	Assignments to Each Team
14	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 2 Iso, 2 LS
15	2 Comm, 2 Data, 2 Nav, 2 Med, 3 Probe, 2 Iso, 2 LS
16	2 Comm, 2 Data, 2 Nav, 2 Med, 4 Probe, 2 Iso, 2 LS
17	2 Comm, 2 Data, 2 Nav, 2 Med, 4 Probe, 2 Iso, 3 LS
18	2 Comm, 2 Data, 2 Nav, 2 Med, 4 Probe, 2 Iso, 4 LS
19	2 Comm, 2 Data, 2 Nav, 3 Med, 4 Probe, 2 Iso, 4 LS
20	2 Comm, 2 Data, 4 Nav, 2 Med, 4 Probe, 2 Iso, 4 LS
21	2 Comm, 2 Data, 4 Nav, 3 Med, 4 Probe, 2 Iso, 4 LS
22	2 Comm, 2 Data, 4 Nav, 2 Med, 4 Probe, 4 Iso, 4 LS
23	2 Comm, 2 Data, 4 Nav, 3 Med, 4 Probe, 4 Iso, 4 LS
24	2 Comm, 2 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS
25	2 Comm, 3 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS
26	2 Comm, 2 Data, 4 Nav, 2 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
27	2 Comm, 2 Data, 4 Nav, 3 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
28	2 Comm, 2 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
29	2 Comm, 3 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
30	2 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
31	3 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
32	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem
33	2 Comm, 3 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo
34	2 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo
35	3 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo
36	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo
37	2 Comm, 3 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo, 4 Bio
38	2 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo, 4 Bio
39	3 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo, 4 Bio
40	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 4 Rem, 4 Geo, 4 Bio
41	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 4 Iso, 4 LS, 5 Rem, 4 Geo, 4 Bio
42	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 6 Iso, 4 LS, 4 Rem, 4 Geo, 4 Bio
43	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 6 Iso, 4 LS, 5 Rem, 4 Geo, 4 Bio
44	4 Comm, 4 Data, 4 Nav, 4 Med, 4 Probe, 6 Iso, 4 LS, 6 Rem, 4 Geo, 4 Bio

TEAM ASSIGNMENTS – SMALL GROUP

Use this Team Assignment Chart if you are bringing a small group and have booked a one-hour Mission to Mars.

Use the next page, Team Descriptions, to decide who will do what job. On the Crew Manifest use only the Alpha column to record everyone's job assignments.

# of Participants	Assignments to Each Team
12	1 Comm, 1 Data, 2 Nav, 2 Probe, 2 Iso, 2 LS, 2 Rem
13	1 Comm, 1 Data, 2 Nav, 1 Med, 2 Probe, 2 Iso, 2 LS, 2 Rem
14	1 Comm, 1 Data, 2 Nav, 2 Med, 2 Probe, 2 Iso, 2 LS, 2 Rem
15	1 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 2 Iso, 2 LS, 2 Rem
16	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 2 Iso, 2 LS, 2 Rem
17	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 3 Iso, 2 LS, 2 Rem
18	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 2 Iso, 2 LS, 2 Rem, 2 Geo
19	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 3 Iso, 2 LS, 2 Rem, 2 Geo
20	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 2 Iso, 2 LS, 2 Rem, 2 Geo, 2 Bio
21	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 3 Iso, 2 LS, 2 Rem, 2 Geo, 2 Bio
22	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 3 Iso, 2 LS, 3 Rem, 2 Geo, 2 Bio
23	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 3 Iso, 2 LS, 3 Rem, 3 Geo, 2 Bio
24	2 Comm, 2 Data, 2 Nav, 2 Med, 2 Probe, 3 Iso, 2 LS, 3 Rem, 3 Geo, 3 Bio

TEAM DESCRIPTIONS

Each participant will be assigned on a team. Use the list of team descriptions to decide who will do what job.

COMMUNICATIONS TEAM: The Communications Team will be responsible for all verbal messages between Mission Control and the space ship. They should be responsible and cool under pressure. **Skills:** reading and oral communications, work in high stress situations, ability to prioritize.

DATA TEAM: The Data Team is responsible for all text information exchanged between Mission Control and the space ship.

Skills: fast keyboarding, good communication, ability to organize.

MEDICAL TEAM: Members of the Medical Team will study the effects of space flight on the human body and are responsible for the health of the astronauts.

Skills: simple math, keyboard operations, and good interpersonal skills.

NAVIGATION TEAM: The navigators will identify constellations, take measurements and make calculations to get the ship into orbit and land on the Moon and Mars.

Skills: math, geography, and an interest in astronomy.

ISOLATION TEAM: The Isolation Team will use robot arms to conduct chemistry experiments and analyze test results.

Skills: using joystick (video game) controls, patience, observation skills.

PROBE TEAM: The Probe Team is responsible for the assembly, deployment, and monitoring of a satellite.

Skills: strong mechanical skills, analytical problem solving, deduction skills.

REMOTE TEAM: The Remote Team will operate the mechanical arms of a rover on a video monitor and evaluate the surface of the Moon and Mars.

Skills: using joystick (video game) controls, observation skills, patience.

LIFE SUPPORT TEAM: The Life Support Team is responsible for the environmental conditions on the ship that are required to live. They will monitor the air filtering system, water recycling, and electricity. **Skills:** strong problem solving skills, interest in environmental and biological sciences.

BIOLOGY LAB TEAM: The biologists will evaluate living animals, analyze the growth of plants in greenhouse systems, and study crop and seed samples.

Skills: interest in biology, observation, measurement.

GEOLOGY LAB TEAM: The Geology Team will study and compare rocks and surface features of the Earth, Moon, and Mars.

Skills: interest in geology, observation, measurement.

CREW MANIFEST

Each team is split between the Alpha and Beta Crews. The Alpha Crew begins the flight as astronauts, the Beta Crew starts as mission controllers. Write the names of the participants according to their job assignment. Bring this page to the Expedition Center so that the group can be set in place quickly to begin the flight.

Teams	ALPHA Crew	BETA Crew
Communications	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Data	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Medical	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Navigation	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Isolation	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Probe	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Remote	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Life Support	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Bio Lab	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
Geo Lab	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>

PERSONALITY ASSESSMENT

This activity is recommended when the person assigning the jobs is unfamiliar with the participants. To find a team that fits your personality, pick a column in each set that best matches your preferences or actions. Circle the letter below each column. Then use the chart on the next page to match your primary personality type to the most appropriate teams in the Expedition Center. For another activity, see how well your team knows each other. Try choosing the personality type of other team members.

How do you direct your energy?

Tolerate noise and crowds.	Avoid crowds, seek quiet.
Talk more than listen.	Listen more than talk.
Meet people and make friends easily.	Cautious when meeting people.
Blurt out without thinking.	Think carefully before speaking.
Always active and on the go.	Need time alone to recharge batteries.
Likes working or talking in groups.	Small groups or work alone.
On stage.	Behind the scenes.
Participate in many activities.	Participate in few activities.
E	I

How do you process information?

Learn by imitating and observation.	Learn through general concepts.
Use practical methods.	Use imagination.
Recognizable step-by-step methods.	Unusual inspired methods.
Specific, literal descriptions.	General and figurative metaphors.
Appreciate standard ways of solving problems.	Use new and different ways to solve problems.
Realism, common sense.	Imagination, innovation.
Actual experiences.	Possibilities.
Rely on past experiences.	Willing to follow hunches.
S	N

How do you make decisions?

Truth is main objective.	Harmony is main object.
Decide with head.	Decide with heart.
Straightforward truthfulness.	Tactfulness.
Deal with people firmly.	Deal with people compassionately.
The world should be logical.	The world has individual differences.
Critical of flaws.	Overlook flaws.
List pros and cons of an option.	Look for general value of an option.
Tolerate people asking "How are you doing?"	Appreciate people asking "How are you doing?"
T	F

How do you organize your life?

Know what you're getting into.	Adapt to what comes along.
Satisfied finishing projects.	Enjoy starting new projects.
Want my life to be well-planned and decisive.	Fine with adapting to new situations.
Prefer the challenge of making a good plan.	Prefer the challenge of a last minute project.
Make a "To-Do List".	Even if a list is made, don't follow it.
Organized.	Spontaneous.
Keep up with daily calendar.	Calendar is months behind.
RSVP.	Surprise party.
P	J

Use the following information to get a brief description of your personality type. People use one mode of operation within each category more easily and more frequently than we use the other mode of operation. So, we are said to "prefer" one function over the other. The combination of our four "preferences" defines our personality type. Although everybody functions across the entire spectrum of the preferences, each individual has a natural preference that leans in one direction or the other within the four categories.

How do you direct your energy?

E = Extrovert. A sociable person who makes friends easily. Interests and energies of the mind are focused on events, people, and things in the world about us. As a result, extroverts are more interested in what is going on around them than in their own thoughts and feelings.

I = Introverted. Generally shy, unsociable person. Interests lean away from people and events of the outer world to the inner world of one's own thoughts.

How do you process information?

S = Sensing. Sensing prefers to deal with literal information and concrete physical qualities.

N = Intuitive. The Intuitive person uses information to generate abstract possibilities. "Out-of-the-box."

How do you make decisions?

T = Thinking. A "Thinker" makes decisions in a rational, logical, impartial manner, based on what they believe to be fair and correct by pre-defined rules of behavior.

F = Feeling. A "Feeler" makes decisions on the individual case, in a subjective manner based on what they believe to be right within their own value systems.

How do you organize your life?

P = Perceiving. A perceiving person will decide how something should be and then make things fit into that format.

J = Judging. A judging person will look at how things are and then adjust their actions to comply.

The following list matches the personality types to the most appropriate Expedition Center teams. Participants in the *Operation: LEAPFROG* flight can be assigned using these as a guide. If your group has very similar personalities and therefore match a limited number of teams, some can go back to the column that they had the most trouble choosing, switch to the other letter, and look for a team in that new personality type set.

- ENFP-** Probe, Life Support, Data.
- ENFJ-** Data, Medical, Biology.
- ENTP-** Data, Probe, Life Support.
- ENTJ-** Communications, Data, Life Support.
- ESTJ-** Communications, Navigation, Probe.
- ESFJ-** Communications, Navigation, Medical, Probe.
- ESTP-** Communications, Data, Life Support, Probe.
- ESFP-** Communications, Medical, Geology.
- INTP-** Isolation, Life Support, Biology.
- INFJ-** Biology, Geology, Remote.
- INTP-** Isolation, Life Support, Remote.
- INTJ-** Biology, Geology, Remote.
- ISTJ-** Navigation, Probe, Remote.
- ISFJ-** Navigation, Medical, Biology, Geology, Remote.
- ISTP-** Navigation, Isolation, Remote.
- ISFP-** Isolation, Geology, Life Support.

JOB INTERVIEW

Employment Applications and Performance Reviews are part of being in the workforce. Expedition participants can practice both in the following activities. These are recommended for participants early in their careers, such as internship programs.

Make copies of the following “Team Application” and “Performance Review” pages for each Mission participant.

TEAM APPLICATION

Before the expedition activity, describe the jobs available using the Team Description page. Allow participants to apply and interview for the jobs they want. This will also help the person who is assigning teams know what jobs participants are interested in.

PERFORMANCE REVIEW

After the expedition, the participants can review their own performance and discuss with coworkers.

TEAM APPLICATION

Name _____

Career Objectives:

I am applying for a position on these teams:

Number your first, second, and third choices.

- | | | | |
|---|------------------------------------|---------------------------------------|-------------------------------------|
| <input type="checkbox"/> Communications | <input type="checkbox"/> Data | <input type="checkbox"/> Life Support | <input type="checkbox"/> Navigation |
| <input type="checkbox"/> Probe | <input type="checkbox"/> Isolation | <input type="checkbox"/> Remote | <input type="checkbox"/> Medical |
| <input type="checkbox"/> Geology | <input type="checkbox"/> Biology | | |

What qualities do you have for these positions?

What experience do you have for these positions?

References

Name _____

Relationship _____

Name _____

Relationship _____

PERFORMANCE REVIEW

Name _____

State the responsibilities that you had as part of your mission team.

What problems did you encounter in meeting your objectives during the flight?

Rate yourself.

	Poor	Fair	Average	Good	Excellent
Teamwork	1	2	3	4	5
Communication	1	2	3	4	5
Problem Solving	1	2	3	4	5
Responsibility	1	2	3	4	5

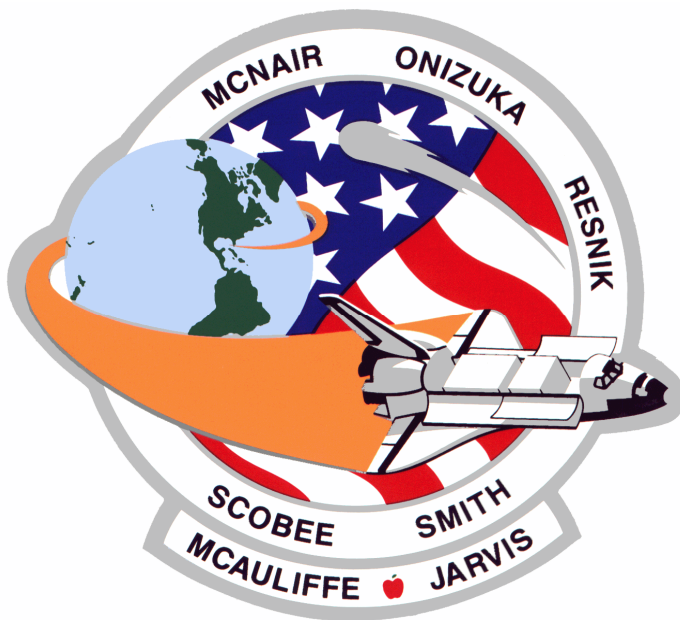
What might you do differently or better if you had the job to do again?

CREW PATCH

Your group can design a crew patch for their expedition. Bring the patch to the Expedition Center to be posted on the wall of Mission Control. We have patches going back through over two decades of simulated space flight. Once your patch is added to the wall, it will not be taken down and will remain there for future “astronauts” to see!

Patch Specifications:

- Patch should be on 8 ½” x 11” paper, with excess paper trimmed away.
- Design should include the name of the company and the year.
- Designs should be colorful and represent the company or department.



51-L Mission Patch

This patch symbolizes the mission to fly, to explore, to teach. The shuttle, being launched from the United States of America, encircles the planet to signify its U.S. presence in space to explore new frontiers. The shuttle in flight with open cargo doors represents the 51-L mission to launch a communications satellite to collect data from Comet Halley and to conduct scientific experiments. The apple next to the teacher’s name signifies the educational mission of the crew to touch the future through the lessons taught in space. The scene is encircled by the surnames of the crew members. They were astronauts Francis R. (Dick) Scobee, Commander; Michael J. Smith, pilot; Ron McNair, Ellison Onizuka and Judy Resnik, all mission specialists; Greg Jarvis, payload specialist; and Christa McAuliffe, teacher.