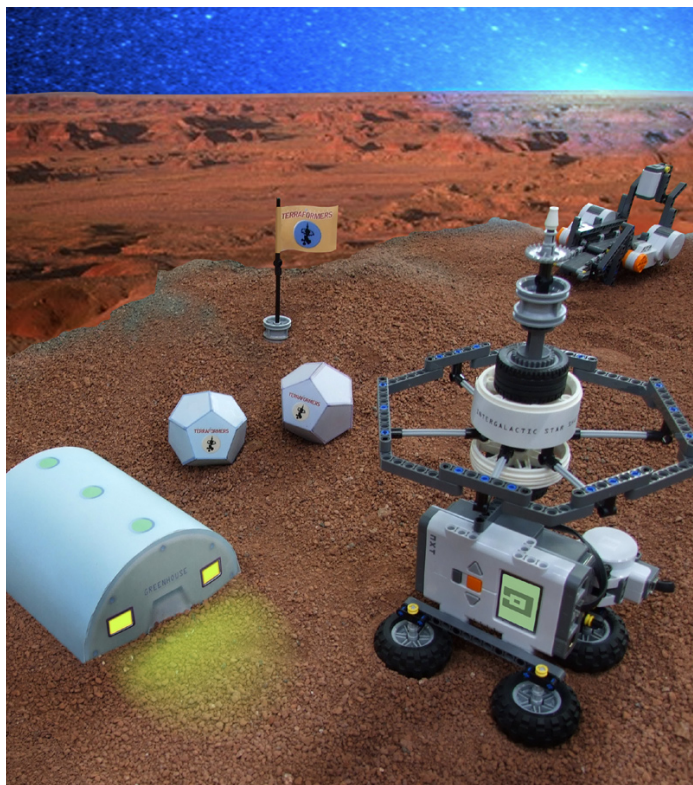


Pantheon Mission Profiles

BACKGROUND

Pantheon is the largest planet in the KRML Cluster. It has an atmosphere that can support human and plant life. Pantheon has drinkable water, but it currently lacks soil rich enough to support plants. The terrain is relatively smooth. The planet has one major volcano— Mt. Valhalla— which has shown predictable thermal activity. The planet also has lakes, gaseous fumaroles, deep fissures, and meteorite craters. Rock analysis has revealed an abundance of minerals.

Deep Space Terraforming teams have completed construction of a hydroponics greenhouse, and are growing edible plants there. In addition there are space habitats, a communications transmitter, solar station, atmosphere factory, and some roadways already established on the planet's surface.



MISSIONS

1. Plant Flag
2. Rescue Moon Buggy
3. Plug Volcano
4. Pulverize Rocks
5. Analyze Fumaroles
6. Deploy Habitats
7. Retrieve Batteries
8. Extract Lake Water
9. Align Solar Panel
10. Power Up Satellite

MISSION DETAILS

Plant Terraformers Flag

Lay claim to the planet in the name of the Deep Space Terraformers...!

Your Terrabot must maneuver to the flag station, and drop the DST flag on the marked location.

This location was surveyed by DST geologist, and pre-marked for the flag.

Guidelines

1. Robots must transport the flag from the Start area to the flag target circle.
2. Once at the flag marker, the flag should be released autonomously onto the target circle.
3. Robot is not required to return to Start.

Scoring

20 points for placing the flag, upright, so that any part of the flag base touches the flag target circle.

10 points for placing the flag, but not upright, so that any part of the it touches the flag target circle.

5 points for getting the robot to the flag marker, but not autonomously releasing the flag.

Supplemental

For a more challenging mission, penalize teams whose robots drive over Ice Pack Lake.

For example, if at least one wheel fully enters the Ice Pack Lake, 5 points will be deducted.

Rescue Moon Buggy

Traverse the Wastelands to reach the derelict Moon Buggy, stranded long, long ago...

Your Terrabot must travel to the Wastelands and search for the derelict Moon Buggy.

Once found, you should transport it back to the Start Area for repair.

Guidelines

1. Robots must traverse the board to reach the 'stranded' Moon Buggy.
2. For maximum points, robots require some mechanism for connecting with the Moon Buggy.
3. Manual placement of or connection to Buggy is not permitted.

Scoring

50 points for reaching the Moon Buggy, connecting it to your robot autonomously, and towing or carrying it back so it ends up physically crossing any Start area boundary line.

30 points for reaching the Moon Buggy, connecting it to your robot autonomously, and towing or carrying it back towards the Start area, but failing to reach any Start area boundary line.

5 points for reaching the Moon Buggy and making physical contact with it (only).

Supplemental

For a different mission, allow teams to manually (by hand) place the Moon Buggy on their robot, then re-set their robot for a return mission to Start. In this case, 20 points might be awarded.

Plug Mt. Valhalla Volcano

Plug the top of volatile Mt. Valhalla to redirect geothermal energy to Pantheon City...

Your Terrabot must travel to the active volcano Mt. Valhalla. Once there, your Terrabot must cap the volcano with a specially designed thermal capping plug (ping pong ball) to siphon off the volcano's thermal energy. The thermal energy will then be transported to an underground thermal battery station.

Guidelines

1. Robots must transport Capping Plug from Start area to Mt. Valhalla.
2. For maximum points, robots require some mechanism for placing the ball into the crater.
3. Manual placement of ball is permitted and includes partial points as indicated below.

Scoring

60 points for driving to the volcano and placing the Capping Plug into the vent crater at the top of the mountain.

10 points for driving to the volcano and placing the Capping Plug into the vent crater with manual astronaut assistance (by hand). Robot must be adjacent to Mt. Valhalla (judge's discretion).

Supplemental

For a different mission, allow teams to manually (by hand) place the Capping Plug on the mountain, or award points just for releasing the Plug (pin pong ball) on to the mountain's side.

Move Crater Rocks to Pulverizer

Move crater rocks to the Thor Rock Pulverizer, where they will be smashed into powder...

Two Pantheon crater areas have been surveyed and selected as building sites for a future laboratory and movie theater. Prior to construction, rocks in the craters must be removed and transported to the Thor Rock Pulverizer, where they will be crushed for mineral extraction processing.

Guidelines

1. Terrabots must gather the rocks from the craters and transport them to the designated rock corral at the Rock Pulverizing area.
2. Once rocks are in place, make contact with rod to release the pulverizer hammer and smash the rocks.

Scoring

30 points for each rock positioned within the rock target circle.

10 points for each rock placed somewhere in the Rock Pulverizing area, but not in the target circle.

Double points if ALL the rocks are collected and deposited into the target circle.

30 points for pushing the lever and successfully releasing the pulverizer arm to smash the rocks. (10 points if no rocks)

Supplemental

For a different mission, allow teams to manually (by hand) drop the pulverizer arm, if their robot successfully positions the rocks in the target circle.

Analyze Chemicals in Fumaroles

Move chemical sensors to and from boiling fumaroles to determine if dangerous vapors exist on the planet...

Strange, possibly hazardous gases and chemical compounds have been noted around the fumaroles in the Fissure Plains. An earlier mission deployed a chemical sampling sensor into one of these fumaroles. Your Terrabot must travel to the fumaroles, deploy a 'new' sensor in one of the open fumaroles, and retrieve the sensor that is already in one of the fumaroles. Once the sensor has been lifted from the fumarole, it should be brought back to the Start Area.

Guidelines

1. Robots must transport a sensor to the fumaroles.
2. Once at the fumaroles, the robot must place the sensor into one of the open fumaroles.
3. Next, remove the sensor that is already in one of the fumaroles.
4. Return to the Start area with the sensor.

Scoring

100 points for placing a chemical sensor in a fumarole.

80 points for recovering the sensor that is already in one of the fumaroles, and returning it to the Start Area.

50 points if the sensor is removed from the fumarole, but dropped along the way back to the Start Area.

Deploy Hex Habitats

Support scientific study in the Outer Reaches by deploying Hex Habitats where researchers will live...

The Outer Reaches, west of the main Terraformers base, is a region rich with possibility for valuable scientific research. Terrabots will support this effort by deploying space hex habitats: a lab and living quarters. Hex locations are designated on the map.

Guidelines

Robots should transport one or two hex habitats from the Start area to the areas designated on the map.

Scoring

50 points for each hex habitat that is deposited so that it touches the target circle.

20 points for each hex habitat that is positioned completely inside the circle.

Retrieve Thermal Batteries

Transport thermal batteries to help keep Pantheon City powered up and safe for inhabitants...

The Terraformers mission depends on batteries for many key functions. Batteries are charged and stored at an area away from living quarters, but are installed at the maintenance facility (Start Area). You must retrieve batteries from the holding area and deliver them to the Start Area.

Guidelines

Drive your robot to the battery station, gather batteries, and transport them to the Start area.

Scoring

30 points for gathering all the batteries and returning them to the Start area.

10 points for each individual battery returned to Start.

Ice Pack Lake Water Extraction

The colony needs potable (drinking) water. Position the pipeline so it extracts water from Ice Pack Lake...

Ice Pack Lake is full of potable water that can be used for drinking, cooking, and other uses. The water processing tender is in place and ready for operation. Your Terrabot needs to swing the pipeline in place over the Ice Pack Lake in order to tap it, and begin the process of providing water to the base.

Guidelines

Robot must drive to the water facility and push the pipeline into the lake.

Scoring

20 points for pushing the pipeline tip into the lake.

Align Solar Panel

An aligned solar panel will harness energy from the stars and help power communications with Earth...

The satellite communications station is powered by solar energy. Because the planet moves in its orbit, the adjacent solar station needs to have its panels realigned (with the local star) in order to produce power. This will ensure communications are maintained with Earth.

Guidelines

Drive your robot to the solar panel, then lift and realign the position of the main panel.

The panel should now be positioned over the base unit, its flat surface perpendicular to the board surface.

Scoring

30 points for lifting / realigning the panel so that it rests over the base.

5 points for lifting / realigning the panel by hand (once your robot touches the base).

Connect Satellite Station to Solar Station

Earth is waiting for news! Power up the satellite station to initiate the dialog...

Drive your Terrabot to the satellite communications station in order to connect it to the solar station and get powered.

Guidelines

Drive your robot to the satellite dish & lower the connector rod so that it makes contact with the solar station.

Scoring

30 points to push the connector arm down so that it makes contact with the solar station.

5 points for pushing the arm manually (once your robot touches the base).