



Engineering And Robotics Learned Young

◆ EARLY ◆

Robotics Competition Spring 2005 Mission

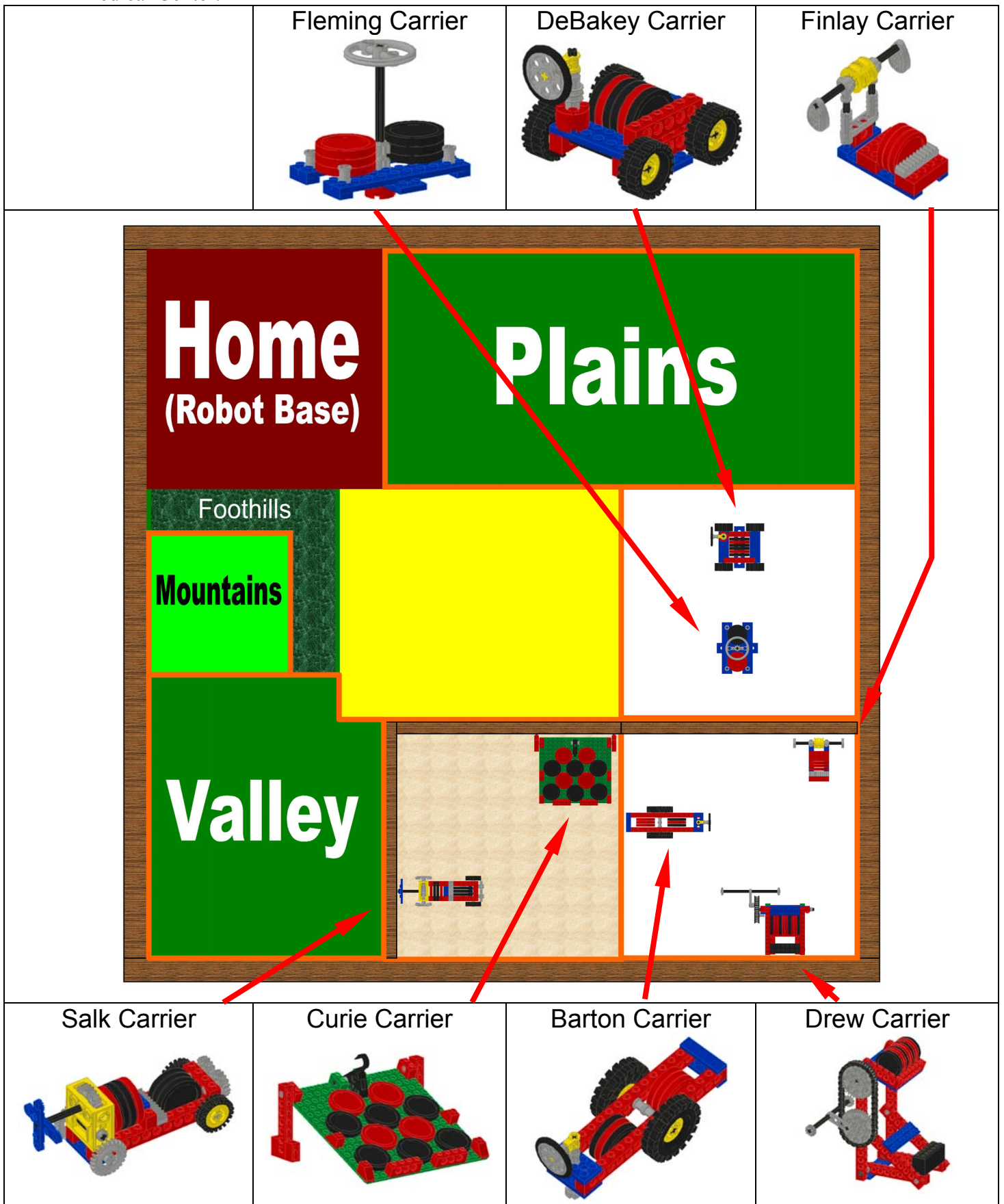
Roboticists, your hard work last fall to help the citizens of Caseyville provide blood and medical supplies to the World was an enormous success. Thank you very much! In fact, your efforts were so successful that there is a surplus of supplies and they have been returned to the Caseyville Medical Center. Caseyville needs your help to return the supplies to the districts so the generous citizens will be able to use them. Please help Caseyville by building a robot to return the supplies to the districts. **Thank you again for helping those around the World!**

Below is everything that we know about the mission.

- The team must be ready to execute the mission for your EARLY Tournament.
- The equipment available for a team to build a robot or robots is 3 LEGO Motorized Simple Machines Kits.
- The following diagram presents the environment that will be encountered.



- The following diagram presents where the Blood & Supply Containers & Carriers are located in the Medical Center.



Mission Rules

1. The team has 2 minutes to complete the mission.
2. There are 48 **Containers** on the playing field at the beginning of each mission, represented by red and black checkers. The red checkers are **Blood Bag Containers**; the black checkers are **Medical Supply Containers**.
3. There are 7 **Carriers** (mission models – Fleming, DeBakey, Finlay, Salk, Curie, Barton, & Drew Carriers) on the playing field at the beginning of each mission.
4. The team's score is determined at the end of the 2-minute mission.
5. If a Container is moving when time expires, the referee will wait until the Container has stopped moving before determining its scoring position.
6. The team scores **1** point for each **Medical Supply Container** on the PLAINS.
The team scores **2** points for each **Blood Bag Container** on the PLAINS.
7. The team scores **3** points for each **Medical Supply Container** in the VALLEY.
The team scores **4** points for each **Blood Bag Container** in the VALLEY.
8. The team scores **5** points for each **Medical Supply Container** on the MOUNTAIN.
The team scores **6** points for each **Blood Bag Container** on the MOUNTAIN.
9. The team will not score points for containers that are touching or being supported by their robot or other team-built devices. Therefore, containers in "leave-behind-devices" along with robots that are holding containers at the end of the mission will not be worth points. Likewise, points are not scored for containers that are in a carrier that is being supported by a robot or device.
10. A Container counts as on the PLAINS if the container is breaking the plane of the PLAINS.
11. A Container counts as in the VALLEY if the container is breaking the plane of the VALLEY.
12. A Container counts as in the MOUNTAIN if the container is breaking the plane of the MOUNTAINS.
The FOOTHILLS are NOT part of the MOUNTAINS.
13. A Container that is breaking the plane of both the VALLEY and MOUNTAINS counts as on the MOUNTAINS.
14. Only the parts that are contained in three Motorized Simple Machine kits may be used to construct the robot (i.e. no other materials such as glue may be used on the robot). The kit parts may not be altered.
15. The team's robot/robots and all parts must start inside of the ROBOT BASE at the beginning of the 2-minute mission (i.e. no part of the robot may be off the playing field when the mission starts). However, the parts do NOT have to be assembled together. Parts can be removed and returned to the field during the 2-minute mission.

16. The ROBOT BASE is the 15" x 15" boundary extended vertically (i.e. the robot can not hang over the line at the beginning of the mission).
17. The team can touch their robot without penalty when the robot is partially inside the ROBOT BASE but after touching, the robot must be completely inside the ROBOT BASE to continue the mission.
18. Any Container or Carrier that remains with the robot when the robot is retrieved without penalty remains in play. This rule is intended to eliminate the need for the referee to determine if a container or carrier is completely in the base when a robot is retrieved after entering the ROBOT BASE. It is NOT intended to allow teams to retrieve their robot in such a way as to drag containers into the base; containers that are dragged into their base will be removed from play by the referee.
19. The team's robot/robots must start inside of the ROBOT BASE every time it is returned to the ROBOT BASE during the mission (i.e. no part of the robot can be breaking the plane of the ROBOT BASE line after being touched by a team member).
20. A penalty of 10 points will be assessed if a team touches their robot, including parts that have become separated from the robot, which is outside of the ROBOT BASE.
21. If a robot is touched, the robot must be returned to the ROBOT BASE to continue the mission.
22. The controllers and wires are NOT considered part of the robot.
23. The robot shall not have any elastic stored energy (i.e. stretched rubber band) when the mission begins or when the robot is returned to base but elastic stored energy can be generated from activating a motor.
24. The controller and wire can ONLY be used to provide electrical power to robot motors (i.e. it can not be used to drag the robot, corral Containers or Carriers, etc.).
25. If a controller or wire are used illegally (referee's call), the team will be required to immediately place the robot back in the ROBOT BASE to continue the mission.
26. A team may touch any Container or Carrier COMPLETELY inside the ROBOT BASE without penalty.
27. If a Carrier is illegally touched, the playing piece along with any Containers it is holding will be removed from play for the remainder of the mission.
28. A Carrier is NEVER considered part of the robot.
29. Blood Bags and Medical Supplies are very valuable. A penalty of 10 points will be assessed for each Container that leaves the playing field.
30. All referees' rulings are final and may not be appealed.

Please contact Lucien.Junkin@jsc.nasa.gov or Chris.Culbert@nasa.gov with any questions or comments.

Thank you for maintaining the spirit of the game!