



# INTO ORBIT<sup>SM</sup> Challenge Updates

## Robot Game Updates

### U08 – CRATER CROSSING #2 13 November 2018

The “crossing Equipment” is whatever crosses completely east to completely west for points. Crossing Equipment is the only Equipment that needs to cross. Any other equipment involved, which might throw or Transport the crossing Equipment, does not need to cross.

Examples:

- If a ball was thrown to score as the crossing Equipment, then only the ball needed to cross. The crossing ball was not part of the Robot, so the Robot didn’t need to cross.
- If the ball was Transported across and dropped, then again, only the ball needed to cross. The crossing ball was not part of the Robot, so the Robot didn’t need to cross.  
**(See Rule D10)**
- If a ball was built into the Robot and later removed by hand, then the entire Robot had to cross. The ball was part of the Robot, so the entire Robot needed to cross.  
**(See Rule D04)**

The Gate must be flattened by the end of the Match, but how and when that happens doesn’t matter.

For this Mission, Teams and Referees alike clearly need to know the difference between something which is Transported by the Robot and something which is part of the Robot. **Rules D10 and D04.**

Teams: If you’re unclear about that difference, study it, or your strategy could be risky.

Referees: If You’re unclear about that difference, study it, or you’ll need to over-use **Rule GP3.**

### U07 – ESCAPE VELOCITY 5 November 2018

The spacecraft needs to be stuck at the very top of the Model as shown. Like with M04, please, the only solution here is the obvious one. Smash the Strike Pad and have as much fun as possible in the process. Unfortunately, this actually is rocket science, but just the impact and ballistics part.



## **U06 – CRATER CROSSING** 5 November 2018

Every year there are Missions designed to benefit teams who read the text that one extra time, and notice what it's not saying - to discover the hidden freedoms, and solve the Mission differently, and maybe more easily than everyone else, while still scoring the points... This is not one of those Missions. This one's just to see if you can navigate over an upraised, uneven surface. For this Mission, you need to make something which

- starts completely east of the Craters
- crosses westward over the Craters
- and ends up completely west of the flattened Gate.

It does not matter if a separate object throws, pulls, pushes, carries, places, or paves the way for the actual crossing equipment, as that would be a separate object and not considered part of the crossing equipment. Anything **CONNECTED** to the crossing object however, is **PART OF** the crossing equipment, and that also needs to cross. Finally, if the crossing equipment places weight on the Mat and/or Craters, all weight-bearing spots need to go between the Towers during the crossing action.

## **U05 – FRAGILE SATELLITES** 5 November 2018

It is understood that your Robot will damage the Satellite Models, and that the volunteers taking care of them will make errors when rebuilding them.

- Teams: Satellites will have their basic bodies on their bases, with undistorted loops, but the precision of their finer details shall be considered random.
- Field Resetters: Please ignore what was written above, and do your best to maintain properly built Satellites. Keep hi-res pictures with you if needed.
- Referees: R17 shall not apply for the Satellite Models, and GP3 should have slightly wider range than usual.

## **U04 – SOLAR PANEL ACCESS** 7 October 2018

Your Robot is free and expected to switch the position of any Solar Panel at any time, to maximize your score, even though one of them wasn't called "your" panel. R16 is not a problem here because:

- Both teams have equal/symmetrical access to both Solar Panels by design of the game.
- The 22-point condition for M02 is about Solar Panel(s) –plural– indicating both.
- All of your scoring diagrams do include both panels.

## **U03 – METEOROID RESET** 24 September 2018

By Rule R10 and Mission M14, a Meteoroid may never be reset outside Base by hand during a Match. By Rule GP5, any portion of a video allowing hand reset must be ignored.

## **U02 – SOME CORE SAMPLES** 20 August 2018

Core Samples can be used to earn points as described in Missions M03 and M05 even if the Core Site Model's axle is not completely empty. This means additional possible scores related to the Core Samples include: 8, 10, 12, 18, and 20.

## **U01 – METEOROID CATCHER SHAPE** 14 August 2018

The Meteoroid Catcher described in the Mission Model Building Instructions is correct. You can ignore the slight difference seen in the pictures of the Challenge Guide.





## Project Updates

### U04 – ALLOWABLE PROJECT DEMONSTRATIONS AT OFFICIAL EVENTS 2 November 2018

This update is to give teams and event managers guidance on what types of demonstrations will be allowed at events. We realize teams may be working on Project solutions that involve the use of liquids, and that they may plan to use prototypes of these devices as part of their presentation at events. Due to potential safety hazards, as well as venue restrictions, we ask teams to bring their Project solution prototype without water or liquid(s) and instead recommend teams present a short video of the working prototype to demonstrate the functionality and/or solution they developed for their project presentation.

### U03 – SOLVING “SPACE PROBLEMS” ON EARTH 11 September 2018

The INTO ORBIT<sup>SM</sup> Project Challenge specifies that the problem your team selects must be “faced during long duration space exploration”; however, it **does not** require that the solution be *applied in outer space*. If your team identifies a problem that clearly arises during space exploration that can be addressed with a solution applied when explorers arrive back on Earth, this is allowable. As with any *FIRST* LEGO League Project, your team should be able to demonstrate how your problem meets this season’s criteria, and you should be able to explain your innovative solution clearly.

### U02 – SOLVE YOUR “SPACE PROBLEM” FIRST 01 August 2018

In many past seasons, the Project directions have instructed teams to “*design an innovative solution that adds value to society.*” For the INTO ORBIT<sup>SM</sup> Project, your problem is very unique: You must “*identify a human physical or social problem faced during long duration space exploration within our Sun’s solar system and propose a solution.*” For this season, to avoid any confusion about just whom your solution should benefit, we have removed the phrase “*adds value to society*” from the Challenge Guide. This is to make it clear that your team **only** needs to worry about finding a solution that helps the people in space affected by your problem. If it happens to also help people on Earth by creating a “spinoff” solution, that’s great! However, it’s not a requirement. Judges will be notified of this Update so that when they are evaluating your team’s solution, they do not expect you to develop an innovation that also solves a problem on Earth.

Also, remember that teams are expected to share their work as part of the *FIRST*<sup>®</sup> LEGO<sup>®</sup> League Project. However, we realize that it may not be possible to share your research with an expert in space exploration. That’s OK! Remember that you can share your Project with any of the professionals you consulted as part of your research to achieve Accomplished or Exemplary levels on the rubric.

### U01 – FINDING HELP 01 August 2018

One of the most frequent questions we are asked about the Project each year is, “How can we find people to help our team learn more about \_\_\_\_\_” (space, water, animals, nanotechnology, etc.). For the INTO ORBIT Challenge, we realize that not everyone lives down the street from a place that launches rockets!

However, if you will review the Challenge Guide closely, especially pages 16-18, you will see that the “*Ask A Professional*” section lists many more jobs than just astronaut and rocket scientist. In fact, many types of professionals can help your team understand some of the problems involved in long-duration space travel. Health care professionals can help you discover some of the physical problems people confront in space, such as exposure to reduced gravity and radiation. Psychologists and social workers can help you understand some of the social problems people face when they are away from family and friends for long periods of time. Aeronautical, mechanical and electrical engineers can help you appreciate some of the amazing systems that are needed to develop spacecraft capable of keeping crews healthy and safe. You might even consider contacting a teacher at a college or university, or seeing if there is a science center or planetarium nearby. The “*Websites and Articles*” section on page 14 of the Guide has a list of places you can begin looking for assistance.

There are also some starter questions on page 7 of the Guide, and some sample problems listed on page 8. These sections may help you begin your research and select a problem. They may also spark an idea about who you might ask





for help. The “*Share with Others*” section on page 9 of the Guide also has some tips about finding support for your team. Presenting your Project to professionals is a great way to share your work!

Judges are aware that teams will be talking to a *wide variety* of professionals during the INTO ORBIT season. So, don’t worry, you will not be expected to find your own personal astronaut or rocket scientist!

