



2023 MATE INTERNATIONAL COMPETITION COLLABORATIVE BONUS MISSION

Since 2018, the MATE ROV Competition has challenged teams to work together to accomplish a task. From assembling an underwater puzzle to constructing the foundation of a dam and filling airbags to raise a banner, MATE has asked teams to join forces and work with other teams to achieve a goal – or in the case of this year, to solve the mystery from Task #2: What is inside the container lifted from the depths of the Dillon Reservoir?

As was presented in the competition manual, in the late 1950s, the Denver Water Board voted to build a dam to secure water for the Front Range; the Old Town of Dillon was flooded. More than 70 years later it sits as a western “ghost town” at the bottom of the lake, with many buildings and homes – and their contents – still intact.

Perhaps there are still valuables in those building and houses, either objects of monetary value, or possibly articles of historical note. The container listed during Task #2 was heavy, but free of debris. There is another container still on the bottom, one that is covered by seventy years of detritus and debris...

And this is your BONUS MISSION, if you choose to accept it...

In cooperation with other companies, pilot your ROV to remove pieces of debris from the top of the container. Once all of the debris is removed, the container will open and its contents will float to the surface, to be retrieved by your ROVs and returned to the surface, side of the pool.

MISSION NOTES

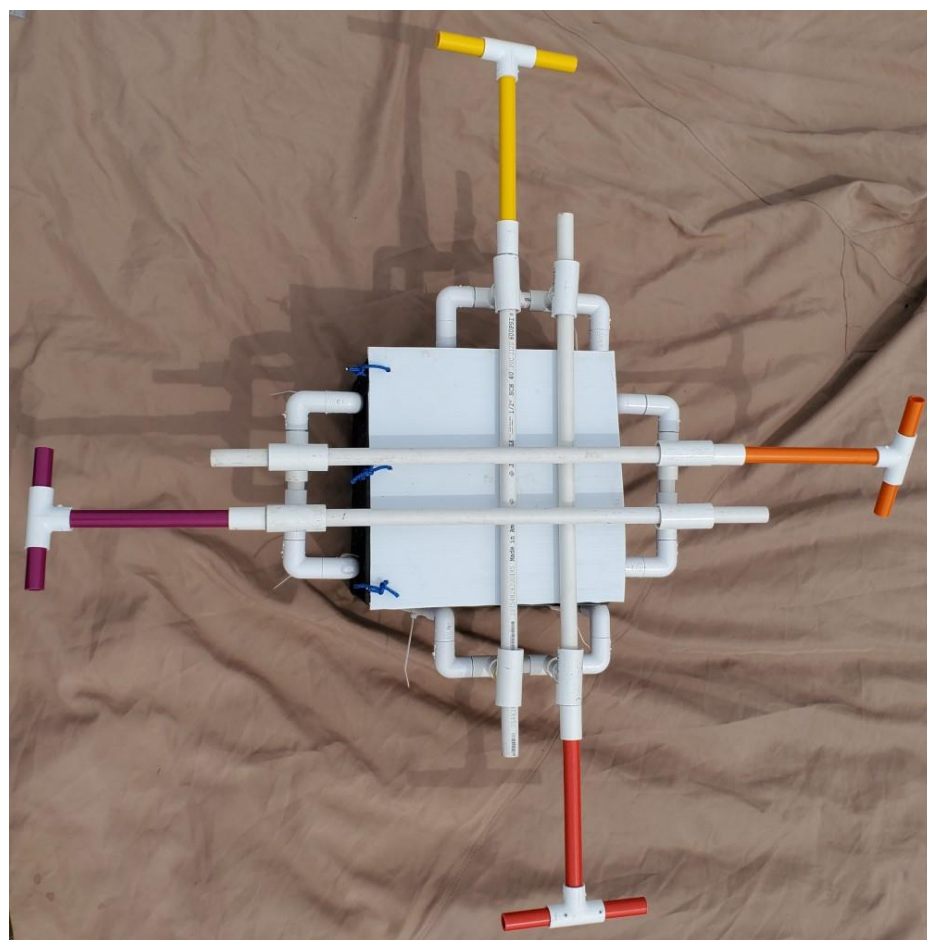
On Saturday morning, companies will have one chance to remove a piece of debris from the top of the container. Multiple pieces of debris will be on top of the container, and each company will be assigned a specific, color-coded piece. Four companies (a mix of RANGER, PIONEER, and EXPLORER class) will attempt to remove their assigned, color-coded piece debris simultaneously. Once all four pieces of debris are removed, the lid of the container will open, and four smaller containers will float to the surface. The containers will be color-coded to match the pieces of debris. Companies must retrieve their assigned color-coded container and return it to the surface, side of the pool.

Again, both the debris and the small container will be color-coded – red, purple, yellow, and orange – and companies will be assigned to work with a specific color.

The debris will be constructed from ½-inch PVC. The ½-inch pipe will run through two ¾-inch tees. Companies must pull the debris out 66 cm to remove it from the container. The debris can be left on the bottom of the pool; it does not need to be returned to the surface.

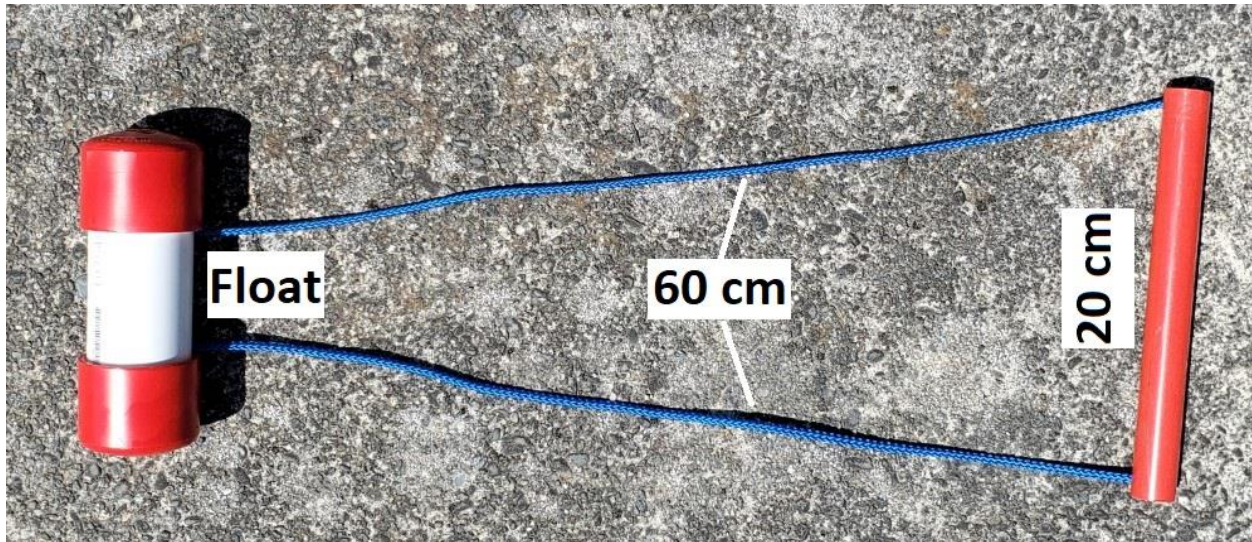


A piece of debris (purple).



Four pieces of debris on top of the container

The small container will be constructed from 1 ½-inch pipe with end caps on each end. Flotation inside of the pipe will allow it to ascend to the surface once the lid of the container is opened. The small container will have a grab loop underneath it, constructed from rope and ½-inch PVC pipe.



The small container and grab loop.

Companies will have 10 minutes to remove the debris from the top of the container and retrieve the small container to the surface, side of the pool. Companies will have 5 minutes to set up and 3 minutes to demobilize their ROV.

Companies may only remove their own debris and retrieve their own small container; they cannot remove other companies' debris. However, companies may assist other companies by providing directions and guidance. Companies unable to remove their assigned debris with their own ROV may ask to pilot another company's ROV to remove the debris. Companies that have successfully removed their debris may also offer their ROV to another company's team member to pilot in order to remove that team's assigned debris.

For example, while company A was successful in removing their assigned debris, company B was not. Company B can pilot (with permission) company A's ROV to remove their (company B's) assigned debris. This benefits company B, but also benefits company A by releasing the smaller containers to the surface to be recovered.

Companies will receive 15 points for removing their debris. If all four pieces of debris are removed, all four companies in that round will receive an additional 5 points. Companies will receive an additional 5 points for returning their small container to the surface, side of the pool.

So, each company can receive up to a total of 25 bonus points. These points will be added to each company's total overall score.