



Glider can be deployed in 2 ways:

- Use the pick point, lower the glider into the water using A or J frame. Attach a quick release to the glider pick point and release the glider as soon as it touches the water.
- Use small boat. Manually lower the glider in to the water by hand.

Cautions:

- 1.The external CTD is extremely fragile. It cannot bump into anything during the deployment process.
- 2.The tail fin/rudder is very fragile as well. Top of the tail fin is where all the communication antennae are located. Loosing comm means loss of glider.
- 3.The wings are delicate. Glider is not designed to go or be pulled backwards. The wings will fracture if it does. Unlike the CTD or the tail fin, the wings can be replaced.
- 4.Body of the glider is not designed to take nonuniform stress, only the stress points along the body should be used to pick up and tie down the glider. The steel tail bar can be used as a handle to grab the glider.
- 5.Glider should not be deployed in sea higher than 5-7 feet, unless it's long period swell.

Glider Deployment (for Bridge)

NOTE: Glider deployment require coordination of 3 teams at 3 location on the ship: bridge, deck team, and glider command. Only the team on the deck will be able to see the glider during deployment (and recovery). Glider command (Donglai for Survey 1 & 2, Sherrie for Tracer 1) will coordinate the glider deployment from computer stations on the second level of the ship. Boatswain will make the calls on the details of the deployment from the deck. It's critical that the bridge and glider command be kept informed for the physical status of the glider and its location relative to the ship.

Glider will not be deployed in 5-7 ft or higher seas.

Deployment steps:

1. Glider in cart, wings attached and ready to be hooked to A-frame.
2. Glider command runs final test, and give okay to bridge and boatswain.
3. Bridge bring ship into the wave/wind, carrying minimal way, just enough so that ship doesn't fall off the wind and/or go backwards.
4. Deck team untie glider from cart, attach glider pick point to A-Frame with quick release. Lower glider into the water, as soon as glider touches water, use quick release to detach glider. Deck team let bridge and glider command know that glider is free.
5. Bridge moves ship slowly forward, away from glider, stop after about 100 feet. Deck team should be able to see glider during this entire time.
6. Glider command issue start of mission instruction to glider. Glider will dive with in few minutes. Deck team let bridge and glider command know that glider is underwater.
7. Resume normal ship activity.

Glider Recovery (for Bridge)

1. If no visual of glider, GPS location of the glider will be relayed to bridge from glider command.
2. Visual identification of glider at surface.
3. Glider command lets bridge and boatswain know that glider is ready to be recovered.
4. Boatswain takes over recovery at this point. Glider will either be picked up from the side using the crane or from the stern. If necessary, small boat will be launched to recover glider.
5. Once glider onboard, wings will be removed and secured to its cart.
6. Resume normal ship activity.

Glider Spec/Performance:
yellow aluminum hull (has been seen on ship radar before)
length: 1.5m, width: 1m (inc. wings)
weight: 52 kg
GPS navigation
3-4 week endurance
1 km/hr or 28 cm/s nominal speed
2 casts/hr to 200 meters
surfaces every 6 hours
20-25min surfacing time
~ 48 casts per day

Glider in flight behavior

Once glider is deployed, it will undulates up and down the water column, traveling forward at roughly 1km/hr.

Glider travels from depth of 200 meters to a few meters below the surface. One up down counts as one cast.

Glider uses DR navigation when underwater.

Glider surfaces once every 6 hours to transfer data back to NJ and obtain GPS fix. Science data will be processed, compressed and sent to the ship once a day. Navigation data (surfacing time & location) will be sent to Donglai and Dennis (Survey 1 & 2) and Sherrie (Tracer 1) via email every time glider surfaces.

Glider will be flown back and forth along cross section of the target eddy. Glider track will rotate in the direction of the eddy current. Its Eulerian track would look like a spiral.

Navigation / collision avoidance:

Although the probability of collision between glider and the ship is minute, we still need to be careful when glider and ship is operating in close proximity. Region near eddy center has the highest collision probability.

Glider surfacing time and expected flight track/destination for upcoming 6-12 hours will be provided to the bridge when available/possible. Keep minimum of 1 km separation between glider and ship under normal operating conditions.

Glider has been reported seen on ship radar when at surface. Radar might be of help when operating near glider at night or in low visibility conditions.