**Assumptions**

1. **我们不考虑天气，如降雨，台风等对模型的影响。在深海，天气的影响极小。**
2. **我们不考虑潜水艇的旋转，即只考虑平动过程。**
3. **我们不考虑海底材料对潜水艇运动的影响。**
4. **为评价安全性，我们模型模拟极端情况，即在潜水艇失事瞬间，丧失一切动力，无法减少质量以达到上浮。**
5. **在失事前，主船与载人潜水器通讯正常，且能知道其具体位置。**
6. 我们不考虑潜水器能自动上浮到水面的情况。在现实中，潜水器上升到水面后仍需要被搜寻，但搜索难度与下沉情况相比小得多。故为了简化模型，我们不考虑这种情况。

We make the following assumptions in this paper:

1. We do not consider the rotation of the submersible, that is, only the translational process.

2. Communication between submersibles and the host ship is ideal. Before contact is lost, the main ship can receive relevant information from the submersible.

3. We do not consider the special weather, such as rainfall, typhoons, etc., and the impact of Marine life on the state of submersible movement.

4. In fact, the seabed environment and slope will have an impact on the movement of the submersible. However, to simplify the model, we consider the seafloor topography to be horizontal only because depth affects vertical motion.

5. To evaluate safety, our model simulates extreme cases. It is assumed that after the submersible has an incident, it will lose all power. It cannot reach the surface by reducing its mass. The situation that the submersible can automatically rise to the surface is also neglected. In reality, the submersible still needs to be searched after it rises to the surface, but the search is much less difficult than in the case of sinking. To simplify the model, we're not going to consider this case.

Additional assumptions are made to simplify analysis for individual sections. These assumptions will be discussed at the appropriate locations.