

## **Transmitter Environmental Factors Feasibility**

### Objective:

Design a transmitter case which will prevent water damage in the worst-case scenario of it being detached from the shaft and submerged for the period of an hour at depth.

### Materials:

- Transmitter Case
- Test Rig (filled with water) or simulated water pressure equivalent
- (Optional) Water detection sticker

### Theory:

Estimated Static Fluid Pressure –

$P_{static} = \text{fluid density} * g * \text{height}$

$$= 1000 \text{ [kg/m}^3\text{]} * 9.8 \text{ [m/s}^2\text{]} * 1 \text{ [m]}$$

$$= 9.8 \text{ kPa}$$

### Test Plan:

1. Remove transmitter from case
2. Close case securely
3. Submerge case at tank depth, begin timer
4. Retrieve case after 1 hour
5. Dry outside completely
6. Open case and determine if any water is present