To instantiate the generic assurance case pattern to create an assurance case for the BlueROV2, a remotely operated underwater vehicle, we follow the predicates provided, filling in placeholders and instantiating elements based on the specific context and requirements of the BlueROV2. Below is the derived assurance case, presented in hierarchical tree structure:

@Assurance\_case

- G1: Hazards for BlueROV2 addressed in accordance with ALARP principle

-- S1: Argument by risk reduction/elimination of each hazard

--- G2: No intolerable risks present in the BlueROV2 system

---- C1: Definition of "intolerable" (Intolerable risk assumed as any risk exceeding regulatory thresholds)

---- S2: Argue that risk posed by any remaining hazards is negligible (undeveloped)

---- S3: Argue that no other risks have been identified (undeveloped)

--- G3: Risk from mechanical failure has been reduced as low as reasonably practicable

---- C2: Assigned severity class is critical

---- S4: Apply ReSonAte to estimate level of risk from mechanical failure hazard

----- A1: Function safety checks and emergency shutdown (function required by BlueROV2's BowTie Diagram (BTD)) is available

----- G4: Model BTD accurately describes possible propagation of mechanical failure hazard (BlueROV2 mechanical components)

----- G5: Quantitative risk estimates are accurate and below acceptable threshold

------ G9: State probability distribution used for risk estimation is an accurate representation of expected system states (undeveloped)

------ G10: Estimated probability of major water ingress is below allowable threshold for critical severity class

------- Sn1: Risk estimation shows a 0.01% probability of occurrence

@end\_Assurance\_case

In this constructed assurance case, the hierarchical tree structure begins with a root goal (G1) and delves into strategies (S1 through S4) and supporting goals (G2 through G10) at increasing levels of depth indicated by additional dashes at each level. This structure is interlaced with context (C), solutions (Sn), and assumptions (A), along with a detailing of instantiated placeholders particular to the BlueROV2 context (such as the critical nature of mechanical failure). Some elements remain undeveloped or uninstantiated, preserving toggles for further developmental iteration.