Based on the given assurance case pattern and the domain information about the BlueROV2 system, here is an assurance case for the BlueROV2 system depicted in a hierarchical tree structure:

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- 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 system

- C1: Definition of "intolerable"

- 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 obstacle encounter has been reduced as low as reasonably practicable (several instances)

- C2: Assigned severity class is Major

- S4: Apply ReSonAte to estimate level of risk from hazard condition obstacle encounter

- A1: Obstacle detection function required by BTD is available (uninstantiated)

- G4: Model obstacle encounter BTD accurately describes possible propagation of hazard obstacle encounter (uninstantiated)

- G6: Possible hazard propagation paths correctly captured in BTD (undeveloped)

- G7: Barriers in the BTD correctly describe their respective control action including any required system functions (undeveloped)

- G8: All non-negligible threats have been identified (undeveloped)

- 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 collision is below allowable threshold for severity class major (uninstantiated)

- Sn1: Estimated risk level Xextodo^-3 per hour (uninstantiated)

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Explanation:

- \*\*Goal (G1)\*\* addresses all known hazards in the BlueROV2 system as per the ALARP principle.

- \*\*Strategy (S1)\*\* provides overarching steps to argue the elimination or reduction of hazards.

- \*\*Goal (G2)\*\* asserts no intolerable risks are present within the system, using \*\*Context (C1)\*\* which defines what risks are considered intolerable.

- \*\*Strategy (S2)\*\* and \*\*Strategy (S3)\*\* are undeveloped, implying further work is necessary to argue that remaining risks are negligible or that no other risks have been identified.

- \*\*Goal (G3)\*\*, in the presence of \*\*Context (C2)\*\*, asserts that risks associated with the hazard of obstacle encounters have been ALARPed. This goal is instantiated multiple times given different hazards.

- \*\*Strategy (S4)\*\* extends the analysis, dependent on \*\*Assumption (A1)\*\*, that needed functions are available (which has not been instantiated, reflecting a need for further specification).

- \*\*Goal (G4)\*\* is uninstantiated and suggests the need for verifying that the BTD modeling accurately describes hazard propagation.

- \*\*Goals (G5 to G10)\*\* are structured to ensure robust estimation and mitigation of risks, with \*\*Goal(G10)\*\* specifically addressing the permissible limits for any identified consequences such as collisions.

- \*\*Solution (Sn1)\*\* captures the specific quantitative estimates associated with risk, still needing instantiation to specify actual risk levels, supporting the assertion in \*\*Goal (G10)\*\*.

Each level of indentation represents a deeper step in the hierarchical argument structure, with goals often depending on strategies or solutions that support them. Many components require instantiation or further development, indicating areas where additional information is necessary to complete the assurance case.