Based on the predicates provided and applying them to the known domain information about the BlueROV2 system, here is how the assurance case pattern can be instantiated and structured into a hierarchical tree format:

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- Goal (G1, Hazards for BlueROV2 system addressed in accordance with ALARP principle.)

- Strategy (S1, Argument by risk reduction/elimination of each hazard)

- Goal (G2, No intolerable risks present in the system.)

- Strategy (S2, Argue that risk posed by any remaining hazards is negligible) (Undeveloped)

- Strategy (S3, Argue that no other risks have been identified) (Undeveloped)

- Context (C1, Definition of "intolerable") (Uninstantiated)

- Goal (G3, Risk from obstacle encounter has been reduced as low as reasonably practicable)

- Strategy (S4, Apply ReSonAte to estimate level of risk from hazard condition obstacle encounter) (Uninstantiated)

- Goal (G4, Model obstacle encounter BTD accurately describes possible propagation of hazard obstacle encounter) (Uninstantiated)

- Goal (G6, Possible hazard propagation paths correctly captured in BTD) (Undeveloped)

- Goal (G7, Barriers in the BTD correctly describe their respective control action including any required system functions) (Undeveloped)

- Goal (G8, All non-negligible threats have been identified) (Undeveloped)

- Goal (G5, Quantitative risk estimates are accurate and below acceptable threshold)

- Goal (G9, State probability distribution used for risk estimation is an accurate representation of expected system states) (Undeveloped)

- Goal (G10, Estimated probability of collision is below allowable threshold for severity class major) (Uninstantiated)

- Solution (Sn1, Estimated risk level 10^-3 per hour) (Uninstantiated)

- Context (C2, Assigned severity class is major) (Uninstantiated)

- Assumption (A1, Function avoidance logic required by obstacle encounter BTD is available) (Uninstantiated)

```

Notes:

1. \*\*Placeholders Represented by {}\*\*: Each placeholder in goals, contexts, and assumptions has been instantiated with specific references from the domain information about BlueROV2 (e.g., `{A :: System}` has been instantiated as "BlueROV2 system").

2. \*\*Undeveloped and Uninstantiated Predicate\*\*: Some strategies and goals were not fully developed or provided detailed solutions in the provided assurance case pattern. These have been noted as (Undeveloped) or (Uninstantiated) to indicate their status.

3. \*\*Multiplicity and Choice Handling\*\*: The pattern required handling multiplicity (multiple strategies for a goal) and choice, which were made explicit through instantiation focus, such as differentiating when one of multiple strategies or goals must be definitively developed or provided.

This structured format helps articulate the elements of the assurance case and their relationships within the context of ensuring safety for the BlueROV2 system, relating specifically to reducing and managing hazard risks according to the ALARP principle.