Based on the provided assurance case pattern and the predicates, I will create an assurance case for the BlueROV2 system using the predicates and replacing placeholders with specific information from the domain:

### Assurance Case for BlueROV2 System

- \*\*G1: Hazards for BlueROV2 System 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)\*\*

- \*\*G3.1: Risk from Deviation from the operating area has been reduced as low as reasonably practicable\*\*

- \*\*C2: Assigned severity class is Minor\*\*

- \*\*S4: Apply ReSonAte to estimate level of risk from hazard condition Deviation from the operating area (undeveloped, assuming function required by BTD is available but unspecified)\*\*

- \*\*G3.2: Risk from Obstacle encounter has been reduced as low as reasonably practicable\*\*

- \*\*C2: Assigned severity class is Major\*\*

- \*\*S4: Apply ReSonAte to estimate level of risk from hazard condition Obstacle encounter (undeveloped; assuming function required by BTD is available but unspecified)\*\*

- \*\*G3.3: Risk from Loss of pipeline has been reduced as low as reasonably practicable\*\*

- \*\*C2: Assigned severity class is Minor\*\*

- \*\*S4: Apply ReSonAte to estimate level of risk from hazard condition Loss of pipeline (undeveloped; assuming function required by BTD is available but unspecified)\*\*

- \*\*G4: Model BTD accurately describes possible propagation of hazard Obstacle encounter (undeveloped)\*\*

- \*\*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 (undeveloped due to dependency on G10)\*\*

- \*\*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\*\*

- \*\*Sn1: Estimated risk level 10^-3 per hour\*\*